

# THE IRON AGE

THURSDAY, MARCH 8, 1888.

## The Silsby Steam Fire Engine and Boiler.

The duty demanded of a steam fire engine is usually heavy, and its treatment of the most severe character. In those departments where there are few or no facilities for putting the machine in perfect condition after exacting service, and no appropriations for maintaining that condition, the engine—if complicated, and consequently liable to get out of order—is seldom in a state to do its best work;

type. There are, however, several peculiarities of detail which will be better understood from a study of Fig. 1. From the crown sheet depend water tubes having in them concentric circulating tubes, causing in each tube a strong central downward current of water, which, mostly converted into steam, ascends in a thin film in the annular space between the outer and the inner tube. These drop tubes are arranged in concentric circles, those in the outside rows being larger than the others, thus better utilizing the space in the com-

power is very great. The shell and fire-box are of Siemens-Martin steel, having a tensile strength of 60,000 pounds. The shell and tubes are of double the actually required strength. All heating surfaces, being straight, are easily cleaned and kept clean on both sides, and where exposed to the direct action of the fire are covered with water. There is also a suitable dump grate. The water tubes are inclined outward at the bottom so as to assist the draft and to present the tube heating surface to the best advantage. They are screwed

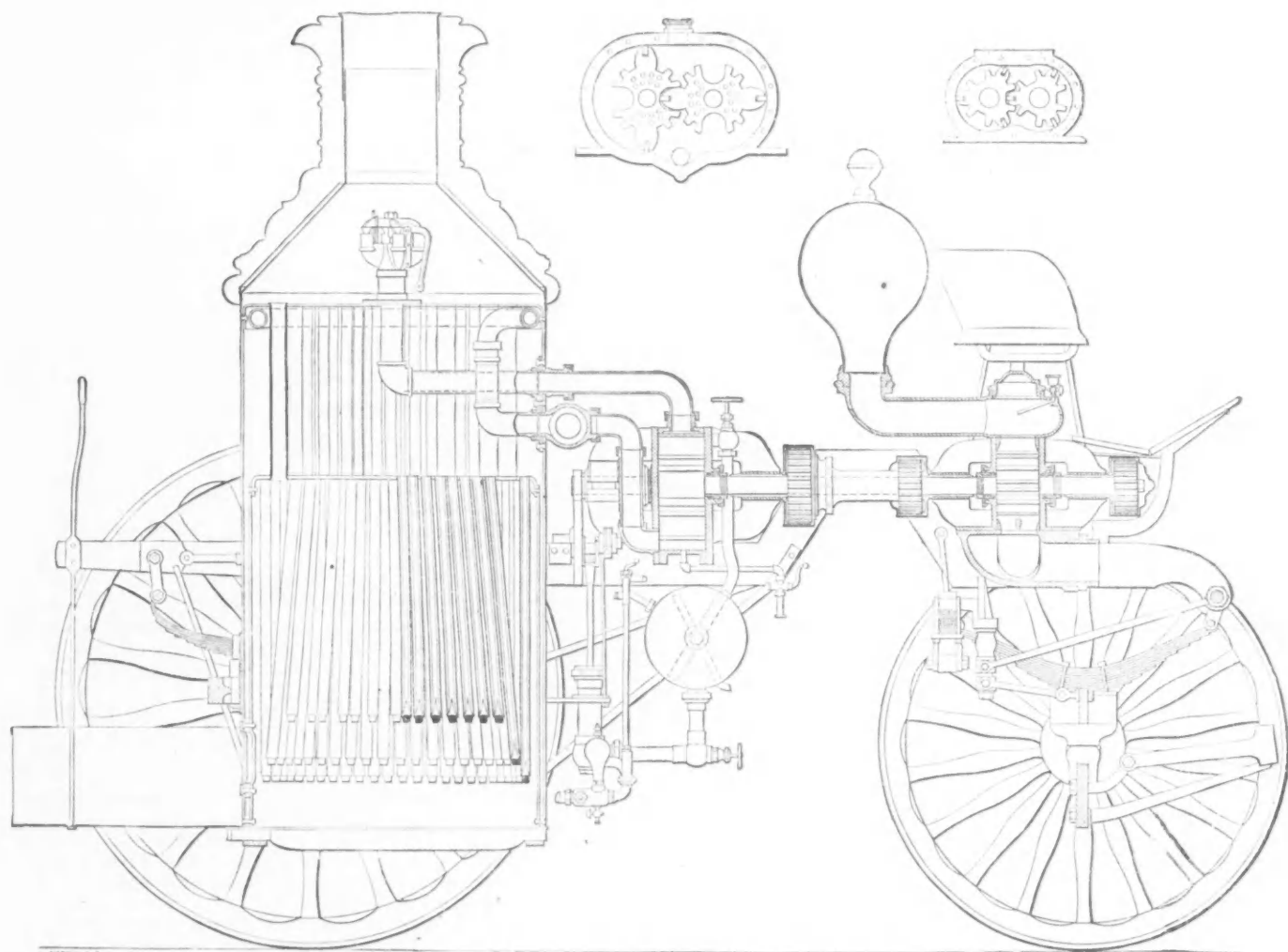


Fig. 1.—Vertical Section of Engine and Boiler.

STEAM FIRE ENGINE, BUILT BY THE SILSBY MFG. COMPANY, SENECA FALLS, N. Y.

while in those situations where proper care-takers are provided, the demands upon the machine and its "crew" are generally so frequent and severe that there is little or no time for repairs. This being the case, it is essential that a steam fire engine shall be of the most simple design and construction consistent with the prime requisites of great capacity and durability. It must, in addition, be so light in weight as to be quickly got to the scene of action, without being weak in any of its parts.

These requirements appear to be met to a great extent by the engine built by the Silsby Mfg. Company, of Seneca Falls, N. Y., engravings of which we present in this issue. The boiler, it will be noticed, is in appearance of the well-known vertical

bustion chamber. The gases of combustion pass through vertical smoke flues set concentrically, a conical smoke chamber, properly jacketed, connecting with the stack. The draft is regulated by a variable exhaust nozzle, the rapid succession of steam discharges affording a practically steady blast. The exhaust nozzle has several outlets, each controlled by a conical plug, all of which are regulated at once by a suitable lever. There being several outlets, there is a more even pull of the blast upon the grate surface, and less danger of the blast being stopped up, and thus causing back pressure upon the engine. The heating surface in water tubes, smoke flues and fire-box walls being so large, the steaming

into the crown sheet, and the circulating tubes have at their lower ends triangular casements to prevent the lifting of the water by the rapid circulation.

The steam is taken from a circular perforated dry pipe running around the steam space of the boiler. The water tubes may be unscrewed and replaced in a few minutes, and all the smoke flues can be readily got at by removing the dome. The boiler, it is claimed, will raise steam from cold water in from four to six minutes, will burn coal or wood, will not foam nor prime and will use salt water if necessary. There are two steam gauges on the boiler proper, together with a signal whistle and other adjuncts. The shell is jacketed. While both Figs. 1 and 2 show the engine

proper, a better idea of its character can, perhaps, be obtained from Fig. 3, which represents a cross section. It is of the rotary type and consists, in the main, of two revolving pistons or cams, both alike, and each, in effect, a gear wheel having eight short teeth arranged in pairs, with one long tooth and one deep space between each two pairs of short teeth. The short teeth are for the purpose of insuring that the two cams revolve together exactly. The long teeth are, in effect, abutments for the steam, forming, as they do, steam-tight joints with the walls of the case in which they revolve and with the deep spaces in which they engage. The steam entering at the bottom of the case tends to force the abutments apart, thus causing rotation of the pistons in opposite directions. The tightness of the joints which the ends of the teeth make with the case is insured by packing pieces set out by springs and prevented from flying out of

absolute certainty of rotation of the pistons or cams is further insured by well cut gear wheels upon the shafts outside of the steam and water cases. The steam pistons being of greater diameter than those for the water, enable a great water pressure to be maintained. The steadiness of this pressure can be still further insured by an air-chamber. The water pistons are oiled, when necessary, by a cup and tube, and like the steam pistons are furnished with suitable packing pieces, shown in our engraving. The packing pieces can be removed through openings in the sides of the case and set out, it being on the ends of these that the wear comes. They can thus be taken out without tearing the engine or pump apart. For cold climates there is a thaw pipe, by which live steam may be blown into the feed pump and connecting pipes, as well as into the main pump. There is a water-pressure gauge upon the discharge chamber. There are discharge outlets or hose attachments upon

found in bridges belonging to some of the best managed companies in the State. In general these defects were confined to details, the principal members being, in the case of bridges constructed within the last 10 or 15 years, sufficiently strong.

#### Softening Hard Water.

The city corporation of Southampton, England, have successfully applied a softening system to the supply of water needed for the city, aggregating about 2,000,000 gallons daily. The only water supply available has to be drawn through a deep chalk formation, which makes the water so hard that it is unfit for household and factory purposes. The method of purification adopted is a modification of the Clark process. By this process water containing carbonate of lime is softened by being mixed with a certain proportion of lime water or caustic lime. The carbonate of lime which makes the water

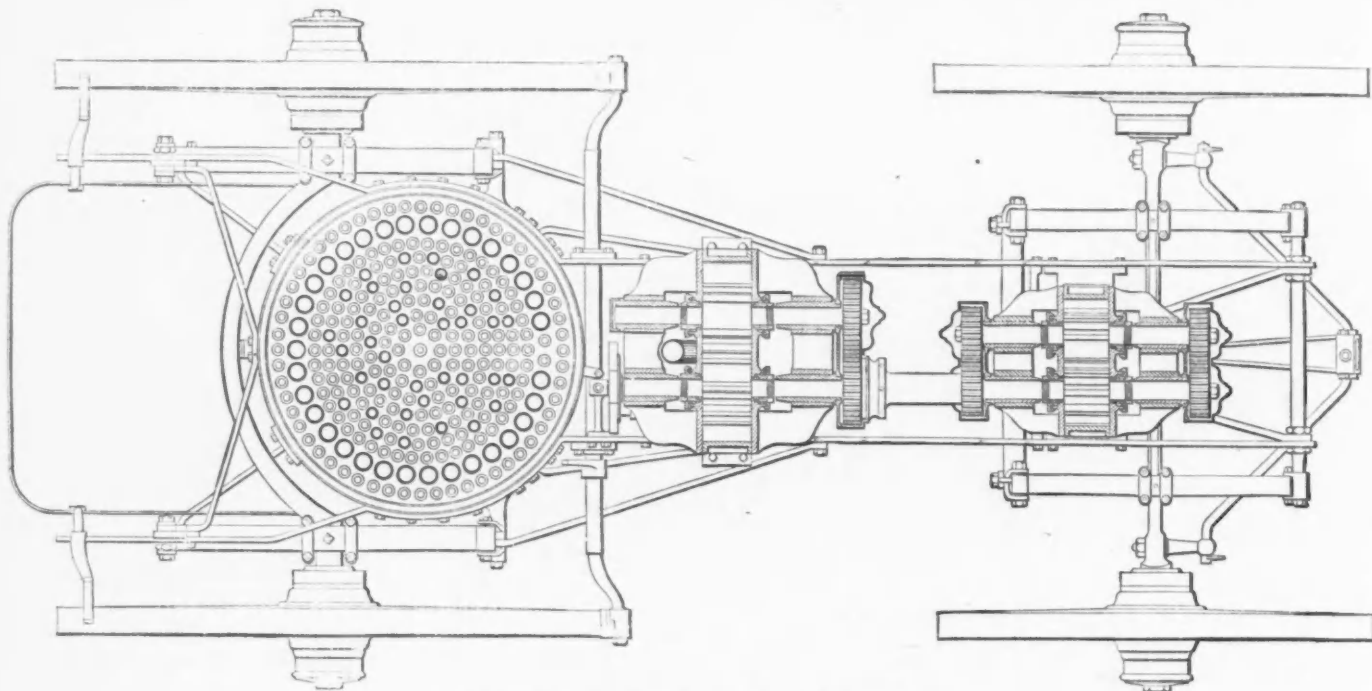


Fig. 2.—Horizontal Section of Engine and Boiler.

STEAM FIRE ENGINE, BUILT BY THE SILSBY MFG. COMPANY, SENECA FALLS, N. Y.

the ends of the teeth by suitable features. Each volume of steam, having caused a half revolution of the pistons, is discharged through the exhaust opening at the top of the case. The latter is lagged with wood and jacketed with a nickel-plated brass sheet. The heads of the pistons are turned to fit the flat ends of the case, and are provided with recesses for lubricants. A drip cock for draining is attached.

The construction of the pump, which also is of the rotary type, is shown in Fig. 4. It is similar to that of the engine, only there are three long teeth to each piston and fewer short or guide teeth. The water enters at the bottom of the case and is discharged at the top. The revolution of the pump pistons in opposite directions causes a vacuum in the case, and the water rushes up to fill it, and is then caught by the long teeth or abutments and swept out of the case. The greater number of teeth is given in order to insure greater steadiness of stream than would be given by only two long teeth upon each piston. There are no valves. The motion being continuous and the connections tight, the stream must be uninterrupted. The journals of the engine and pump run in long bearings. There are suitable stuffing-boxes to insure steam and water-tight joints for the shafts. The

each side, and from one to four streams can be thrown simultaneously.

The boiler may be fed, if desired, from the main pump, but an independent feed pump is supplied, operated by a pinion. The details of the running gear, framing, &c., will be understood from Figs. 1 and 2. All parts of the engines are made to gauge and can be readily duplicated. The engines are fitted with spiral springs or platform springs as desired.

In accordance with a State law the railway companies having lines in Massachusetts are required to submit to a board appointed for the purpose detailed information of the condition of their bridges. Though all the lines concerned have not as yet complied with the statute, it is stated that a sufficient number have been reported on to show the action of the Legislature was perfectly justified. The companies themselves were in many cases but inaccurately acquainted with the state of their bridges, and the present examination has shown that many required strengthening, while some will have to be entirely rebuilt. The strain sheets for the bridges were examined by Professor Swain, the expert appointed by the board, who reports that defects previously unsuspected have been

hard is kept in solution by the presence of excess of carbonic acid. When lime is added sufficient to neutralize the carbonic acid, the lime added and that already in solution are precipitated as lime carbonate. If the water is now permitted to stand without agitation, the precipitated lime settles to the bottom in the form of mud and the clear water can be run off. In practice, the objection to this system of purification has been, that part of the precipitate was apt to get mixed with the water as the latter was passing off, and in that case the benefits of purifying were lost. In the process adopted by the Southampton corporation a filtering arrangement is added to the tanks where the lime is precipitated, and the work of purifying the large quantity of water mentioned is done very satisfactorily and cheaply. We see no reason why the same system should not be applied at the principal water stations of railroads that are suffering from the numerous evils that result from the use of feed water badly impregnated with carbonate of lime.

Industrial education was a subject fully discussed at a conference in Philadelphia, in which the commission appointed by the Governor to inquire into the industrial school system took a prominent part.

President Steel, of the Board of Education, said he hoped the investigation might result in the State taking control of the matter. The subject of manual training was to him one of the utmost importance. It held the same relation to society to-day that mental training did when that was first taken up. Much of the false idea of labor at the present day, he thought, was on account of the system of education now in use. "It is a one-sided mental training," he said. "Manual training in schools is quite as readily reduced to a graduated course as mental. About one-half the pupils who attend public schools leave at the age of 12 years, and if there is any merit in manual training it must be taken up when the children are very young." He wanted children so developed that they would be enabled to choose their occupations and know which one they had an inclination for. He did not see how the manual training in schools would have anything to do with the apprentice system, or would in any way take its place. Technical schools, he said, were desirable, but he doubted if they could properly be made a part of public education. That class of mechanical work done in the schools should be merely to develop the skill of the hands

### The Economy of Low-Pressure Steam.

So much is being done in the present day with high-pressure steam that there is some danger of forgetting that low-pressure steam properly used may give very satisfactory results as regards coal bills. This is mainly true, however, only of pumping engines; but the ascertained facts throw a curious light on the existing state of the theory of the steam engine, and, as they are by no means generally known, we take pleasure in presenting, in substance, an article bearing the above head, which appeared in a recent issue of the *London Engineer*. The facts there given show that with very low pressures indeed the consumption of fuel may be less than 3 pounds per indicated horse-power per hour.

No inquiry connected with the steam engine can be more interesting, perhaps, than one intended to determine the relations which exist between cylinder condensation and steam pressure. It seems possible that the higher the pressure the greater, other things being equal, may be the liquefaction, but nobody knows whether this is or is not the case. It is, however, certain that low-pressure steam does

per horse per hour can only amount to  $1.31 - 1.25 = 0.06$  pounds per hour, and we need hardly stop to say how radically different an engine expanding steam fifteen times must be from one expanding it ten times. The extra cost of the latter engine might be so great that the game would not be worth the candle. Mr. Clark's figures are purely theoretical and based on the assumption that no cylinder condensation takes place. No one imagines that 100 pounds of steam expanded ten times will give out 1 horse-power per 13 pounds of it used. If, however, we go to the other end of the scale it will be found that practice accords better with theory, and it is quite possible that engines expanding only twice may, as to consumption of feed-water, run at pretty nearly what is theoretically possible.

In the *Engineer* are here given a few *fac simile* diagrams which are intended to throw light on this point. One of these diagrams was taken from a Cornish engine, at Wolverhampton, on February 1, 1886. The engine was fitted with Davey's differential valve gear, instead of the usual plug-rod and cataraft arrangement; but in all other respects it was a true Cornish engine.

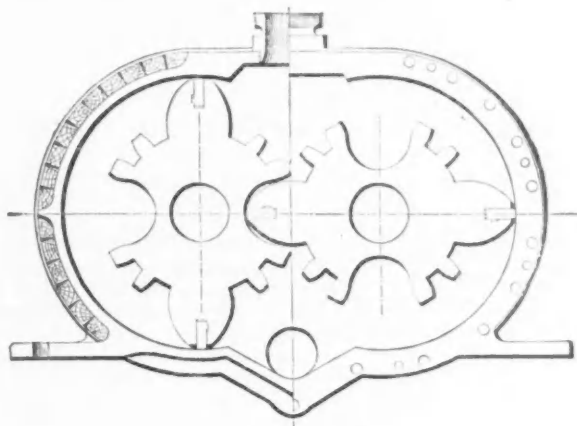


Fig. 3.—Cross Section of Engine.

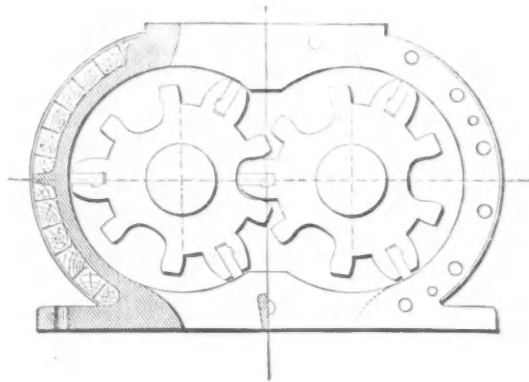


Fig. 4.—Cross Section of Pump.

### STEAM FIRE ENGINE, BUILT BY THE SILSBY MFG. COMPANY, SENECA FALLS, N. Y.

and enable the pupil to find out whether he had a pleasure in any particular occupation. The managers of the industrial school at Rochester in their annual report advise that the system of trade schools should be extended until such a variety of trades are taught that every boy can find a school in which he is specially qualified to learn.

It is said that a steel propeller, with screws fore and aft, is to be built for the Hoboken Land and Improvement Company, to be used as a ferryboat on the North River. Colonel Stevens, the president, and Captain Woolsey, the superintendent, say that in propellers the engines can go below deck, thus saving the space occupied by the paddle-boxes. The propeller is faster and can make better headway against floating ice. There is, besides, less danger of injury from drifting logs. The new boat will be 200 feet long and 37 feet beam, with powerful engines, and cost in the neighborhood of \$100,000. If she proves to be a success others are to be built, and the old ferryboats will be altered to the new model.

Judge Brown, of the United States Circuit Court of the Eastern District of Michigan, in chancery in the case of the Cylinder Oil Cup Company vs. the Detroit Lubricator Company, denied the motion of the plaintiff for a preliminary injunction. The sight-feed patents were involved.

not compare badly with high-pressure steam, almost altogether because the steam is so manipulated that the initial condensation is small. Mr. D. K. Clark has given calculations showing the work to be got out of steam of 100 pounds pressure absolute, when worked with varying ratios of expansion, the clearance being in all cases 7 per cent. of the whole space swept through by the piston at each stroke:

When steam is cut off at, stroke.....	1	¾	½	¼	1-5	¾	1-10	1-15
The quantities of steam consumed per horse per hour are, lbs.....	34.0	26.9	21.0	16.0	14.9	13.5	13.1	12.5
And allowing that 10 lbs. of steam are produced by each 1 lb. of coal, then the consumption per horse per hour will be, lbs.....	3.4	2.69	2.1	1.6	1.49	1.35	1.31	1.25

Before going further it is well to point out how small is the gain obtained during the higher ranges of expansion. The reason for this may be made clear in a moment. The hyperbola is a curve which, however much prolonged either way, never can touch its asymptotes, which are two straight lines drawn at right angles to each other. Now, the curve of expanding steam is in practice pretty nearly a hyperbola. Mr. Clark's figures show that by augmenting the ratio of expansion from one-tenth to one-fifteenth the coal saved

The boiler pressure was 34 pounds above the atmosphere, but the steam was throttled and was only 14 pounds above the atmosphere, or 29 pounds absolute, in the cylinder. The engine did a duty of 63,000,000 per 1 cwt. of coal. The feed-water was very carefully measured, so that we may eliminate the coal altogether if we think proper. The engine indicated 93 horse-power, and test lasted one hour. During that period there were used 2400 pounds of

feed-water, and  $\frac{2400}{93} = 25.8$  pounds per horse per hour. Comparing this with Mr. Clark's figures for 100 pounds steam cut off at three-quarter stroke, we see that the Wolverhampton engine is a little more economical. The steam valve closed somewhere about the 13.5 pounds ordinate, so that so far as the valve gear was concerned the steam is expanded less than three times. The whole amount of expansion is, however, very considerable if we measure it by dividing the initial by the terminal pressure. In all cases, however, steam is wire-drawn in the Cornish engine, and it is claimed by Cornish engineers that this is one of the reasons why these engines are so economical, because the wire-drawing dries the steam, for reasons very well known.

The second diagram was taken from a Cornish engine at Tattenhall, on the 8th of February, 1886. Here the initial pressure was only 16 pounds above the atmosphere, yet a duty of 64½ millions per 112



pounds of coal was done, corresponding to 3 pounds per indicated horse-power per hour. The boiler pressure was 34 pounds, but the throttle-valve reduced the pressure in the cylinder. The third diagram, from an engine at Wheal Abraham, was yet more interesting. The wire-drawing in this case was very considerable. The duty of the engine in regular work was 90,000,000 per 112 pounds of coal, or a little less than 2.5 pounds of coal per effective horse-power per hour.

It might be urged that by using higher pressure and an earlier cut-off a better result would have been got; but the Cornish engine, as is well known, is not suitable for working expansively in any extreme degree, and the excellent results obtained from it are due to the circumstance that cylinder condensation is very small. It is a remarkable circumstance that wire-drawing should be adopted without loss in the Cornish engine, but it must be noticed that the wire-drawing should be of such a character that the curve described by the indicator pencil shall very closely resemble that which would be drawn were the steam expanded without wire drawing. That a very close coincidence is possible is proved by direct experience, and is therefore beyond question. This matter requires more investigation than it has yet received, or, to speak more accurately, more publicity is wanted concerning the investigations which have been made at various times by Cornish engineers. These gentlemen possess a vast store of curious data, which would throw light on several vexed problems, but for one reason or another they have never made the information public. Is it too much to expect that some of them may act on the old adage, "better late than never"?

Among the many misnomers current in the sheet-metal vocabulary, few are more misleading than the term "galvanized" as applied to an article coated with zinc by the dipping process. To persons ignorant of the method by which sheet iron, cast iron and other goods are given a zinc surface, the word galvanized suggests electroplating, and to this day, we believe that many persons consider a battery or dynamo a necessary adjunct to a galvanizing works. Books of reference have little to say on the origin of the term, most authorities using the word according to its accepted meaning without going into the genesis of its definition. In an old edition of Ure's Dictionary, however, published in 1854, a brief paragraph on galvanized iron throws some light on the point. "Galvanized iron," says the author, "is the somewhat fantastic name newly given in France to iron tinned by a peculiar patent process." The use of the word "tinned" in the sense of "coated with zinc" in the above sentence may perhaps be explained by the fact that in the old Sterling process of making tin plates the sheets were coated with zinc previous to dipping in melted tin. Having told how the zinc is applied to the iron by the "peculiar patent process," Dr. Ure continues: "When the metal thus prepared is exposed to humidity, the zinc is said to oxidize slowly by a galvanic action, and to protect the iron from rusting within it, whereby the outer surface remains for a long period perfectly white." We infer from this that it was the supposed galvanic action that took place between the iron and its zinc covering to the protection of the former that gave rise to the term galvanized iron. Having read this explanation, it is not at all strange that Dr. Ure spoke of galvanized as a "somewhat fantastic name." The true term to apply to zinc-coated iron, and one that is both short and self-explanatory, is zinced iron. The word "zinced" tells what metal is

used in coating the iron, and indicates through its similarity to the word "tinned" the way in which the coating is applied. Zinced is already used to some extent in this country, and, if further warrant were needed for its general adoption, we might refer to the Germans, who, with their usual methodical exactness, have coined both verb and adjective from the German noun for zinc. The French have added to their vocabulary in a similar manner, though a synonym based upon their word for galvanic is still recognized in the French dictionaries.

#### The New Steamer for the U. S. Lighthouse Department.

The twin-screw steamer *Zizania* for the United States Lighthouse Department, which was launched from the yard of H. A. Ramsay & Co., Baltimore, a short time ago, is built of steel and is a novel type of marine architecture, as she has not only twin screws, but each propeller works through a separate and independent stern-post; in fact, she is a dual ship from her dead flat extending aft, having two keels, and a single keel forward. She is 180 feet long over all, 29 feet beam, and 11 feet depth of hold. Her construction is remarkable for strength, and her plating is heavy for a vessel of her class. The frames are but 18 inches apart, and the plating forward of the collision bulkhead is double. She has six absolutely water-tight bulkheads. The deck frames of lower and upper decks are of steel beams. The upper deck is plated with steel and covered with white pine. Below the main deck forward is the forecabin for the crew, and abaft the engine bulkhead in another water-tight compartment is the ward-room for the officers. The inspector's cabin and chart-room are located on the main deck, and above all is a light promenade deck extending over three-quarters of the vessel's length, where is located the pilot-house and captain's state room. The steel plating of the hull runs up to the rail, so that her bulwarks are of steel also. In addition to her main U-shaped keel she is provided with heavy bilge keels, which will prevent violent rolling. Her rig will be that of a topsail schooner, all the standing rigging being of steel-wire rope. A steam derrick forward on the main deck is to be operated by an independent engine, and is to be used in hauling the heaviest class of buoys in and out of her hold. There are two compound engines, one to each screw; they have cylinders 15 inches and 28 inches in diameter and 27-inch stroke. Both engines are furnished with surface-condensing apparatus. There is one overhead return flue boiler built of Siemens-Martin steel. She has a circulating pump, steam feed and fire pumps, and on deck are bilge and fire pumps, steam windlass, &c. All the living apartments and pilot-house are to be heated by steam, and ventilators are provided throughout.

The probability of the intervention of the Spanish government against the calcining of pyrites in the open air by the great copper mining companies of the Peninsula has given fresh impetus to processes to avoid the roasting. Dr. Adolf Gurlt, of Bonn, Germany, in a letter to the *London Mining Journal* says: "When approaching the problem, the author saw as the principal points before him that the sulphide of copper is to be converted into a soluble combination by the cold way and that the substances required for it must lie within easy reach of the mines. This consideration led to the conviction that either sulphate or chloride of copper must be obtained without heating or calcining and within a time not greater than is required by the calcining

process—six to eight months. Experiments have proved that the operation works best by forming chloride of copper by the action of ordinary or sea salt, and a little sulphuric acid upon the raw ore of the size of gravel, when it is kept moist, and the access of atmospheric air freely permitted. The principal part in this process is played by the oxy-chloride of copper, which is easily formed from the chloride by the absorption of oxygen. This oxy-chloride in contact with sulphide of copper, becomes a powerful oxidizer of the latter which is converted first into sulphate and by the presence of salt immediately afterward into chloride of copper. So the chloride of copper becomes the means of rapid oxidation by absorbing oxygen from the air, and by giving it up to the sulphide of copper, as long as the latter and chloride of sodium or salt are present. The trials, at first made on a small scale, have been going on since the end of January on a large scale at the Duisburgh Copper Works under the superintendence of Dr. C. Fabian, the director of the works, with raw Rio Tinto ore. They have proved that with proper arrangements already (after ten to fourteen days) more than one-half of all the copper has become soluble, which result is only obtained after six to eight months in the old way at the mines, thus the great problem appears to be satisfactorily solved, and more detailed communication must be reserved for a future occasion."

#### American Tools in China.

The United States Consul-General, at Shanghai, in a recent report, writes:

American implements and tools will have to be specially adapted to the requirements of China before the Chinese will attempt to utilize improvements of which they can alone learn by experience. Chinese farmers and merchants have strong prejudices for the implements which have been in vogue for centuries. Experiments of forcing American tools here have, with a few exceptions—among which were edged tools, pumps and saws—signally failed. When a Chinaman sees something he can use to a profit he adopts it. There is no reason why we should not supply them with implements and tools fashioned after their own models, making them better and cheaper with our machinery than they can be made by hand. The plows are of the crudest sort, consisting of a crooked beam, with a wooden share. A light plow made somewhat in this style might take with the Chinese; which remark applies equally to hoes, rakes, shovels and spades. The former is a much heavier tool than ours, and is extensively used for turning over clods, which in Central China is the principal system of preparing the ground for receiving the seed. If a hand cotton-gin were made for the Chinese it would meet with a ready and profitable sale. The Chinese cotton is coarse and very short staple; the seed is also very small, and the machinery would have to be adapted to these conditions. An American gin, such as is used in the South, with a crank to turn by hand, could easily be suited to this work. Anything not operated by manual labor would not be taken up by the Chinese, whose conservatism is against innovations of too pronounced a type; besides, their cotton planting is in small areas by small farmers, who are not accustomed to other than the simplest machinery.

In the course of the railroad vestibule patent dispute between the Pullman Car Company and the Wagner Car Company, the former having applied for an injunction to prevent the latter from using the invention, evidence was given that the



invention was an old device revived, and that it had frequently been tried on American and foreign roads years ago. It was shown that several patents had been granted in the United States and in England for inventions that covered the ground covered by the vestibule patents. The fact that the English Government have used vestibules between their mail cars was proved, and Mr. T. A. Bissell testified that 18 or 20 years ago a canopied train similar to the Pullman vestibule train was run on the Michigan Central Railroad. By the decision made, the Wagner Company are restrained from using one feature of the Pullman vestibule, but when the change is made passengers will not know the difference.

### The Production of Steel in 1887.

The American Iron and Steel Association have published complete statistics of the production of all kinds of steel in the United States in 1887—namely, Bessemer and Clapp-Griffiths, open-hearth, crucible, and miscellaneous kinds of steel. The aggregate amounts to the enormous quantity of 3,739,760 net tons, or 3,339,071 gross tons, which exceeds by 30 per cent. our production of all kinds of steel in 1886, in which year we for the first time produced more steel than Great Britain, which country had hitherto led the world in this branch of manufacture. Our production of all kinds of steel in 1886 was 2,870,003 net tons, or 2,562,502 gross tons.

#### BESSEMER STEEL.

Over seven-eighths of our total steel production in 1887 was made by the Bessemer process. The total quantity of Bessemer steel made in the United States in 1887, including the output of Clapp-Griffiths converters, was 3,288,357 net tons, or 2,936,033 gross tons, a gain of 746,864 net tons, or 29 per cent. over the production of 1886. In 1885 we produced 1,701,762 net tons of Bessemer steel, the largest output in one year in our history to that date; in 1887, only two years later, we produced nearly double the output of 1885. This record forcibly illustrates the wonderful capacity of the American people to meet an extraordinary demand upon their energies and resources. In the following table we give the production of Bessemer steel in the first half and second half of 1887; also the total production compared with 1886. In the total production for all of the periods mentioned is included the production of ingots by the Clapp-Griffiths process, but we also add a statement of the output by this process alone.

Bessemer steel.	First half of 1887. Net tons.	Second half of 1887. Net tons.	Total 1887. Net tons.	Total 1886. Net tons.
Pennsylvania.....	911,871	840,574	1,752,445	1,507,577
Illinois.....	89,784	467,729	557,513	535,602
Other States.....	395,977	342,482	738,459	498,314
Total.....	1,697,572	1,650,785	3,348,357	2,541,493
Clapp-Griffiths only...	31,448	37,636	69,084	46,371

Eleven States contributed to the above output of Bessemer steel in 1887, Virginia and Indiana having commenced last year to make this kind of steel. Forty-one works, having 86 converters, including 7 Clapp-Griffiths plants with 14 converters, were employed during 1887 in the production of Bessemer steel.

Pennsylvania made 53 per cent. of all the ingots produced in 1887, against 59 per cent. in 1886 and 65 per cent. in 1885; Illinois made 26 per cent. in 1887, against 21 per cent. in 1886 and 22 per cent. in 1885; the other States made over 20 per cent. in 1887, against a little less than 20 per cent. in 1886 and 13 per cent. in 1885.

#### OPEN-HEARTH STEEL.

Our production of open-hearth steel in 1887 was 360,717 net tons, or 322,069 gross tons, a gain of 47 per cent. over the production of 1886. The output of open-hearth steel in 1887 was made in nine States, Indiana contributing for the first time. The number of open-hearth steel plants employed was 39. The following table shows the production of open-hearth steel ingots and direct castings in the United States in the first half and second half of 1887, arranged according to territorial divisions, and the total production compared with the total for 1886:

Open-hearth steel.	First half of 1887. Net tons.	Second half of 1887. Net tons.	Total 1887. Net tons.	Total 1886. Net tons.
New England.....	9,553	8,889	18,442	23,382
New York and New Jersey.....	128,669	142,041	270,710	172,144
Pennsylvania.....	31,178	33,357	64,535	49,724
Other States.....				
Total.....	170,400	190,317	360,717	245,250

#### CRUCIBLE STEEL.

Our production of crucible steel in 1887 was 84,421 net tons, or 75,376 gross tons, against 80,609 net tons, or 71,972 gross tons in 1886. The following table gives in net tons the production of crucible steel ingots and direct castings in the United States in 1886 and 1887, respectively:

Crucible steel.	1886. Net tons.	1887. Net tons.
New England.....	2,661	2,925
New York.....	4,870	5,000
New Jersey.....	8,046	7,499
Pennsylvania.....	61,792	63,736
Western States.....	2,340	2,271
Southern States.....	900	860
Total.....	80,609	84,421

#### MISCELLANEOUS STEEL.

Our production of steel by various miscellaneous processes not included under the head of any above mentioned was 6265 net tons, or 5593 gross tons, against 2651 net tons, or 2367 gross tons in 1886. Most of this steel was made in Philadelphia and vicinity and in Pittsburgh.

**The U. S. Naval Reserve.**—The question of the organization of a naval reserve is now attracting much attention. It was brought before the United States Naval Institute at a recent meeting in New York, by a long paper by Capt. A. P. Cooke, which dealt chiefly with the question of the proper organization of such a reserve, and did not refer to any provision for a reserve of ships. Captain Cooke urged strongly the necessity of organizing and training a naval militia, and sketched a plan for its training. This force would be composed of both officers and men, and would at all times be ready for service in case of an emergency requiring its services. If the navy is to be increased, and especially if reserve ships are to be provided, some such organization will be a necessity. Its connection with the active navy should be as close as possible, as a reserve must depend upon naval officers for its training, and must act with and under their command in time of war. The management of such a force, however, and the proper adjustment of the many questions which must arise in connection with it, will not be an easy matter.

The Board of Trade of Olean, N. Y., have adopted the novel expedient, to encourage the location of manufacturers there, of guaranteeing homes for their employees built after their own plans, and supplied to them at actual value, the tenants paying thereon the rental price of from \$5 to \$8 per month. Thus is left with the laborer the option of owning his own home or of paying rent, the terms in either

instance being the same, save in the matter of interest upon the unpaid portion in case of purchase.

#### Lead Washers for Iron Roofs.

We are in receipt of specimens of lead washers manufactured by Hornhorst, Littleford & Co., 137 to 141 East Pearl street, Cincinnati, Ohio, for use in laying corrugated and other forms of iron roofs. The accompanying engraving represents one of these washers, full size, and shows in a satisfactory manner its nature. Lead washers have for a long time been employed in Great Britain and other parts of Europe for purposes of this kind, and have been found to serve a useful purpose in making nail-heads water-tight.



Lead Washer.

That their use is exceptional in America is evidenced by numerous inquiries which of late have been addressed to us concerning the source of supply. Careful search through the trade in New York has failed to reveal a manufacturer, and it is therefore of interest to note that a Western firm are engaged in producing these goods. The sample before us indicates sufficient concavity to the washer to fit tightly around the nail-head as the same is driven home. The usefulness of this article is so obvious that extended remarks are unnecessary.

The shipbuilders on the lakes are confronted with a decided possibility of labor troubles this season. They have been notified by the National Trades' Council of Ship Carpenters and Caulkers of the Knights of Labor that after March 1st nine hours will be expected to constitute a day's labor of their craft, that the regular hours of labor will be from 7.30 a. m. to 12 noon, and from 1 to 5.30 p. m., and that the wages shall be \$2.75 per day, with double time for all work done before and after those hours. At a meeting at Cleveland, on the 25th ult., the employers decided to resist the demand made upon them, and to adhere to their present regulations. The trouble may be speedily settled, but on the other hand, there is a possibility of such an interference with the building and repairing of vessels this season as to make the carrying trade of the lakes annoyingly uncertain.

A matter of much interest to scientists in connection with the great lakes has recently been made public. Chief Engineer D. J. Whittemore, of the Chicago, Milwaukee and St. Paul Railroad, has prepared a chart showing the levels of water in Lake Michigan during the period intervening between March, 1836, and December 31, 1887. Up to August, 1872, the observations were taken by the late Dr. Increase A. Lapham, partly in the river at the foot of Poplar street, in the old Eagle mill, and partly at the Government pier, Milwaukee, and were copied from his notes, which his son loaned to Mr. Whittemore. From that date to August, 1882, the levels were taken under Government directions at North Point, and from that latter date to December 31, 1887, by Chief Engineer Benzenberg. If the old notion of alternate phenomenally high water and low water had not been exploded long ago, a glance at the chart is sufficient to convince the most unscientific person that it has had no foundation in fact. The waters of the lake have shown a lordly indifference to regularity, swelling or sinking lawlessly. The flood tide point has generally been attained in the summer and the ebb tide in the winter. Usually the variation in the year is from 2 to 4 feet. The Milwaukee City datum is established on the level of the water in March, 1836. Three

months later the level had risen  $2\frac{1}{2}$  feet above the datum. Before May, 1837, the level had fallen 1.6 feet. From that time to July, 1868, it rose steadily, and observations taken then showed the level 4 feet above the datum. This was the highest water ever known, and it was the time when Solomon Juneau said it rose above the datum 4 feet. Before January, 1839, the water fell 3.7 feet.

#### Treasury Decisions.

The following is a synopsis of sundry decisions rendered by the Treasury Department in customs cases during the week ending February 25:

Fire-screens, so called, which consist of fenders constructed of brass wire, lacquered, woven in open-work style, so as to hinder radiation as little as possible, and at the same time prevent injury from live coals or burning brands, and which are commercially known and designated as "five-fold brass fenders," are not the "screens" which are specified in Schedule K (T. I., 378), but are held to be dutiable, inasmuch as they are not otherwise provided for, at the rate of 45 per cent. ad valorem, under the provision in Schedule C (T. I., 216) for "manufactures, articles or wares, \* \* \* composed wholly or in part of \* \* \* metal."—Letter to Collector of Customs at Boston, Mass., February 20, 1888.

Pieces of bored steel wire, intended for use in the manufacture of hypodermic syringes, each wire being about 3 feet in length and in diameter about the size of an ordinary knitting-needle, are not the "wrought iron or steel tubes or pipes" as specified in Schedule C (T. I., 170), but are held to be dutiable at the rate of 45 per cent. ad valorem, under the further provision in Schedule C (T. I., 216) for "manufactures, articles or wares, \* \* \* composed wholly or in part of \* \* \* steel."—Letter to Collector of Customs at New York, February 21, 1888.

Certain so-called "black taggers iron," which upon careful test was found to consist of thin sheets of steel, not iron, is held to be dutiable at the rate of 45 per cent. ad valorem, it costing less than 4 cents per pound, under the provision in Schedule C (T. I., 177) for "steel \* \* \* sheets of all gauges and widths."—Letter to Collector of Customs at Boston, Mass., February 25, 1888.

We learn from *Le Génie Civil*, that the Estrade locomotive La Parisienne, specially designed for high speeds, and built in the shops of M. J. Boulet, at Paris, is to undergo a series of official trials. Though the engine was illustrated and described in *The Iron Age* some time ago, we may here briefly repeat that it is fitted with driving-wheels somewhat over 8 feet in diameter, and the speed upon which the designer, M. Estrade, figures for ordinary running is something like 78 miles per hour. Its length is about 32 feet, exclusive of tender, and its weight, when empty, 38 tons. The results of the tests will be awaited with some interest.

It is reported that a number of capitalists are interested in a project to cut a ship canal forty miles long across the upper peninsula of Michigan, between Lake Superior and Lake Michigan. The distance by water between ports on these two lakes would be shortened 300 miles and the time of passage would be reduced fully one day, while the "Sov" and the Straits of Mackinac would be avoided. The proposed plan is to connect the head of the Big Bay de Noque, in Lake Michigan, with the head of South Bay, in Lake Superior. The estimated cost of the canal is \$5,000,000.

#### Heating Manufacturing Establishments.

The subject of heating is one that receives at least some attention from every manufacturer, for in this climate some

favorable than those existing in the case of office buildings and stores. Many old buildings are still dependent upon stoves and furnaces; but, nevertheless, steam heating, generally by direct radiation, has to a great extent come in to take their

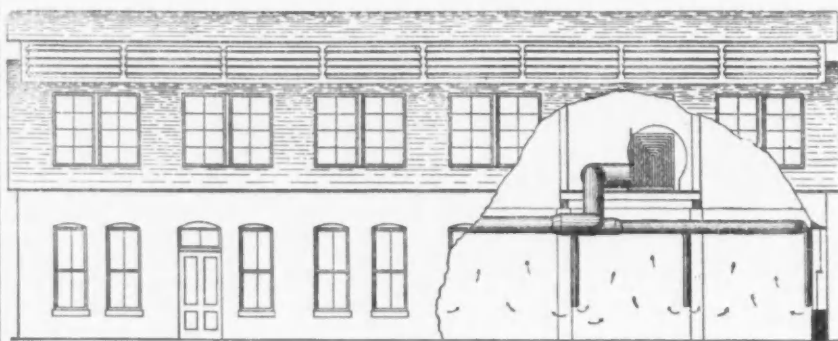
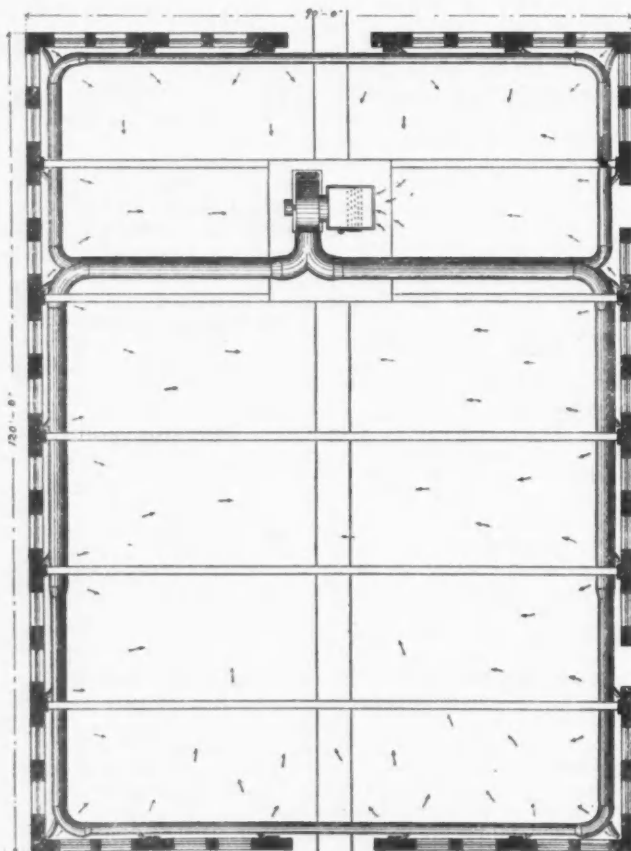
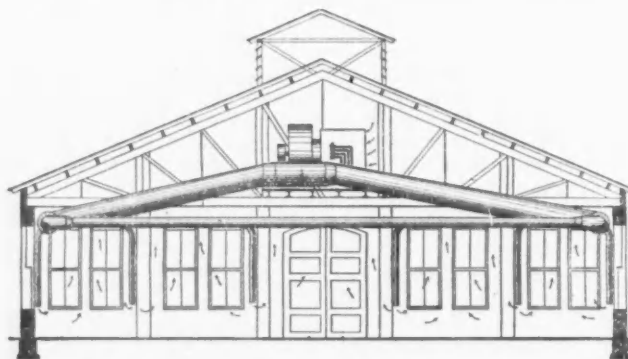


Fig. 1.—Sections and Plan of Blacksmith Shop.

#### STEAM HEATING AT THE SHOPS OF THE P., C. & ST. L. RAILWAY, COLUMBUS, OHIO.

means of heating must be called into play during at least seven months of the year. Owing to their general construction, buildings devoted to manufacturing, particularly, try any system that may be adopted. As a rule, with their walls, an excess of window area and with constantly opened doors, they present conditions far less

place, and with marked improvement if not with perfect success.

The system of heating by a forced circulation of warm air, designed by B. F. Sturtevant, of Boston, Mass., is now rapidly gaining favor and is positive in effect, as the air, by means of ducts and flues, can be conducted to any desired



point and compelled, by the pressure behind it, to do its work of heating by circulation. The only satisfactory means of impelling the air is by a fan of suitable construction. Most shops, from the nature of the work carried on within them, are fitted with a system of shafting and belting from which such a fan may be driven. With an engine connected direct to the fan, there is, however, the advantage that the apparatus may be run at times when the rest of the shop is shut down. In manufacturing of the ordinary type the air may best be distributed from the central steam hot-blast apparatus (consisting of a steam heater and fan, recently described in *The Iron Age*) by means of galvanized-iron pipes, although in some instances the flues may be built into the walls.

The most approved arrangement of the piping and apparatus for a one-story building is clearly illustrated in the accompanying cuts of the blacksmith, machine and boiler shops of the P. C. and St. L. Railway, at Columbus, Ohio. These buildings form a portion of the entire plant of

rise to the pitch of the roof where it may be allowed to escape if desired. By placing the heating system near the outer walls the vulnerable point is attacked and currents of cold air before reaching the workmen, must encounter a warm body of air. Dampers or registers may of course be placed in the outlet pipes to regulate the delivery of the air.

Owing principally to the position of the shafting, two different arrangements of the outlets from the fans were adopted. In Fig. 1 a single fork was made, the air passing in equal quantities and with equal pressures to either side of the building. In the case of the other shop, Fig. 2, opportunity was offered for the introduction of a fan having two outlets so arranged that the air should be discharged from them in the desired direction with no loss of power from friction. The absence of shafting in some of the other buildings of this plant resulted in the introduction of fans driven by direct connected engines.

Although, as originally designed, provision was to be made for taking fresh air

system is under immediate control. The amount of air may be varied by the dampers or by changing the speed of the engine, while its temperature is directly dependent upon the amount of steam admitted to the heater.

The Reading Iron Works have removed their office from No. 259 South Fourth street, Philadelphia, to a new building which they have built at Nos. 220 and 222 South Fifth street. Their warehouse on North Fifth street has also been removed to the new building, so that their office and warehouse are now in one building especially adapted to meet their particular requirements. The *Bulletin* of the Iron and Steel Association describes it as follows: "The main building is a handsome structure substantially built of iron, wood and pressed brick, four stories high. It measures, inside, 48 feet on Fifth street and 75 feet on Adelphia street. Back of this is a strongly built brick annex, 48 feet x 120 feet, for the storage of pipe. Five arched doorways in the annex afford ingress and egress to teams. The first floor of the main building is used for the retail trade in gas-fitters' and plumbers' supplies. The second floor is the main office, partitioned only by low railings, offering no obstruction to the light, which is admitted by ample windows on three sides. The third floor contains the meeting-room for the board of directors, the private office and a general storage room. The fourth floor is occupied by the janitor and by rooms for the storage of papers and documents. No plaster and very little paint is used on the building, the woodwork being carefully finished in oil. The building is heated throughout by steam, and an elevator facilitates the work of the warehouse. For office and warehouse purposes combined the building is one of the handsomest and best arranged in the city. The works of the company are at Reading, Pa. They were commenced in 1836."

A Russian naval officer has written a little book concerning Russia's probable action in the event of war with Great Britain, which, now that it is translated, is creating much comment in the English military journals. The author has, it is evident, informed himself as to the events of our civil war, especially regarding the effective work accomplished by the rebel corsairs Alabama, Georgia and Florida, for it is in like manner he would prey upon the British mercantile marine. He refers, no doubt, to ships of the Vladimir type, which Russia is now building, when he says that, at the first lowering of the war cloud, Russia would dispatch fast unarmored, light-battered cruisers to various distant ports on the great commercial highways, and, being informed by cable at the earliest moment after war was declared, take the seas after British ships. He looks over the roll of British war ships, and finds not one among the number that could catch the Azov, which has made over 20 knots an hour in ordinary seas, and can do still better in smooth water, and pertinently inquires what Britain could do to prevent the loss of her commerce. He estimates that the Russian cruisers would take or burn seven British ships a day on the average for the first few months.

A building at 125 and 127 Indiana street, Chicago, occupied by a number of manufacturing enterprises, was burned on the 29th ult. The sufferers are the Scranton Mfg. Company, makers of door hangers; Douchy & Co., manufacturers of sidewalk and vault lights; the Superior Nickel Plating Company; the Instantaneous Water-Heating Company, and the Western Arms and Cartridge Company. In each case the loss is well covered by insurance, the total damage being estimated at \$32,000.

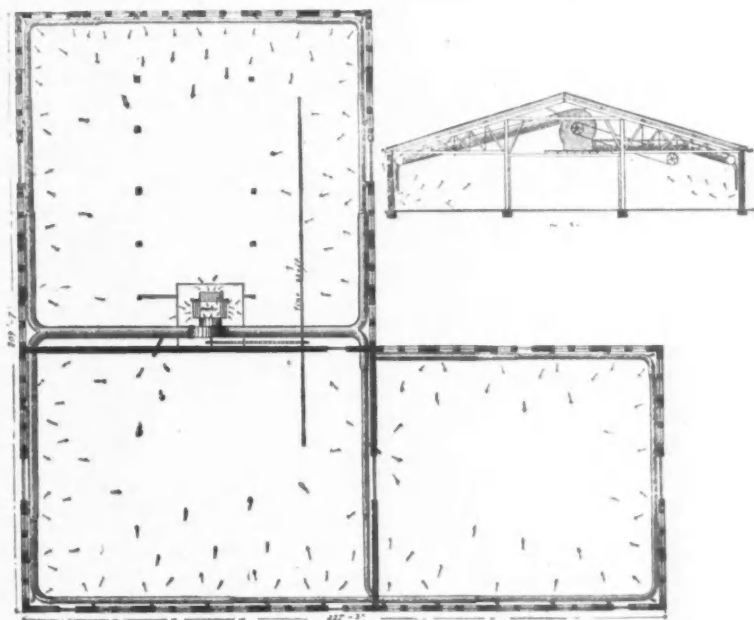


Fig. 2.—Plan of Machine, Boiler and Blacksmith Shops.

#### STEAM HEATING AT THE SHOPS OF THE P. C. & ST. L. RAILWAY, COLUMBUS, OHIO.

six buildings recently fitted out with a complete heating system and apparatus by B. F. Sturtevant. In both cases here shown the Sturtevant steam hot-blast apparatus was placed in the hip of the roof, above the line of shafting and belting, and entirely out of the way of the workmen. The pipes extend entirely around the interior of the building, close to the walls above the tops of the windows. The complete circuit made by these pipes insures an equable and constant distribution of the air, any lack from one direction being made up from the other. Economy of material as well as more uniform pressure is secured by gradually reducing the sizes of the pipes (proportionally to the outlets from them) as they recede from the blower. From the mains the heated air is delivered through small vertical pipes extending down to within a few feet of the floor. By proper designing, the velocity of the air and the relative area of the pipes is such that the air is discharged with just sufficient impulse to fall to the floor, which is thereby warmed. The natural circulation caused by the cooling action of the outer walls aids in this action as it also does in causing the warm air delivered from the pipes to move gradually toward the center of the building, and thence to

from out of doors and passing it through the heater, yet, up to the present time, all air has been taken from within the building itself. Owing to the comparatively small number of workmen in such shops the fresh air which enters through cracks, open doors and windows, keeps the atmosphere sufficiently pure, and decided economy is secured by reheating the already warm air. The amount of steam required in the heater is proportional to the number of degrees through which the air is heated. If this air of, say, 60° temperature can be taken from the building in place of air at 0° from out of doors, and if in either case it is to be heated to 120°, there will be a resultant saving of 50 per cent. in the amount of steam consumed. In buildings of more than one story the matter of proper lighting generally limits the width, so that air may be successfully distributed by a single pipe extending centrally, just beneath the ceiling, on each floor throughout the length of the building. Outlets may be provided upon either side at proper intervals, through which the air may be delivered. By this arrangement the air is forced to the outer walls and there becoming slightly cooled, falls, creating an agreeable temperature throughout the building. The entire

## THE PROPOSED TARIFF.

The Democratic majority of the Ways and Means Committee submitted to the full committee a bill, on the 1st inst., from which we take the following items likely to be of interest, the present duty being added in parentheses:

### Placed on the Free List.

Iron or steel sheets, or plates, or taggers iron, coated with tin or lead, or with a mixture of which these metals is a component part, by the dipping or any other process, and commercially known as tin plates, terne plates and taggers tin (1 cent per pound).

All non-dutiable crude minerals, but which have been advanced in value or condition by refining or grinding, or by other process of manufacture not specially enumerated or provided for; all earths or clays unwrought or manufactured; china clay or kaoline.

Iron and steel, cotton ties, or hoops for bailing purposes, not thinner than No. 20 wire gauge (35 per cent. ad valorem); needles, sewing, darning, knitting, and all others not specially enumerated or provided for in this act (25 per cent.); copper, imported in the form of ores (2½ cents per pound fine), regulus of, and black or coarse copper and copper cement (3½ cents per pound fine), old copper fit only for remanufacture (3 cents); nickel, in ore, matte or other crude form not ready for consumption in the arts (15 cents per pound fine); antimony, as regulus or metal (10 per cent.); quicksilver (10 per cent.); chromate of iron or chromic ore (15 per cent.); mineral substances in a crude state and metals unwrought, not specially enumerated or provided for (20 per cent.); brick.

### Dutiable Articles.

Iron in pigs, iron kentledge, \$6 per ton (\$6.72).

Iron railway bars, weighing more than 25 pounds to the yard, \$11 per ton (0.7 cents per pound, \$15.68 per ton).

Steel railway bars and railway bars made in part of steel, weighing more than 25 pounds to the yard, and slabs and billets of steel, \$11 per ton (\$17 per ton. The provision for slabs and billets is new).

Bar iron, rolled or hammered, comprising flats not less than 1 inch wide nor less than ⅜ inch thick, ⅞ cent per pound (0.8 cent per pound); comprising round iron not less than ⅜ inch in diameter and square iron not less than ⅜ inch square and flats less than 1 inch wide or less than ⅜ inch thick, round iron less than ⅜ inch and not less than ⅞ inch in diameter and square iron less than ⅜ inch square, 1 cent per pound (1.1 cents per pound). *Provided*, That all iron in slabs, blooms, loops, or other forms less finished than iron in bars and more advanced in pig iron, except castings, shall be rated as iron in bars, and pay a duty accordingly; and none of the above iron shall pay a less rate of duty than 35 per cent. ad valorem. *Provided further*, That all iron bars, blooms, billets or sizes or shapes of any kind in the manufacture of which charcoal is used as fuel shall be subject to a duty not less than \$20 per ton (\$22 per ton).

Iron or steel T-rails, weighing not over 25 pounds to the yard, \$14 per ton (\$20.16); iron or steel flat rails, punched, \$15 per ton (\$17.92).

Round iron, in coils or rods, less than ⅞ inch in diameter, and bars or shapes of rolled iron not specially enumerated or provided for in this act, 1 cent per pound (1.2 cents per pound).

Sheet iron, common or black, thinner than 1 inch (1½ inch) and not thinner than No. 20 wire gauge, 1 cent per pound (1.1 cents per pound), thinner than No. 20 wire gauge and not thinner than No.

25 wire gauge, 1½ cents per pound; (1.2 cent); thinner than No. 25 wire gauge and not thinner than No. 29 wire gauge, 1½ cents per pound (1.5 cent); thinner than No. 29 wire gauge and all iron commercially known as common or black taggers iron, whether put up in boxes or bundles or not, 30 per centum ad valorem: *Provided*, That on all such iron and steel sheets or plates aforesaid, excepting on what are known commercially as tin plates, terne plates and taggers tin, when galvanized or coated with zinc or spelter or other metals, or any alloy of those metals, ½ cent per pound additional when not thinner than No. 20 wire gauge; thinner than No. 20 wire gauge and not thinner than No. 25 wire gauge, ½ cent per pound additional; and when thinner than No. 25 wire gauge, ¾ cent per pound additional. (Present law, advance ¼ cent per pound all around.)

Hoop, or band, or scroll, or other iron, 8 inches or less in width, and not thinner than No. 10 wire gauge, 1 cent per pound; thinner than No. 10 wire gauge and not thinner than No. 20 wire gauge, 1½ cents per pound; thinner than No. 20 wire gauge, 1¾ cents per pound; *Provided*, That all articles not specially enumerated or provided for, whether wholly or partly manufactured, made from sheet, plate, hoop, band or scroll iron herein provided for, or of which such sheet, plate, hoop, band or scroll iron shall be the material of chief value, shall pay one-fourth of 1 cent per pound more duty than that imposed on the iron from which they are made, or which shall be such material of chief value.

Cast-iron pipe of every description, six-tenths of 1 cent per pound (1 cent per pound).

Cut nails and spikes, of iron or steel, 1 cent per pound (1½ cents).

Cut tacks, brads or sprigs, 35 per cent. ad valorem (3 cents).

Iron or steel railway fish-plates or splice bars, eight-tenths of 1 cent per pound (1½ cents).

Wrought iron or steel spikes, nuts and washers, and horse, mule or ox shoes, 1½ cents per pound (2 cents).

Anvils, anchors, or parts thereof, mill irons and mill cranks, of wrought iron, and wrought iron for ships, and forgings of iron and steel, for vessels, steam engines and locomotives or parts thereof, weighing each 25 pounds or more, 1½ cents per pound (2 cents).

Iron or steel rivets, bolts, with or without threads or nuts or bolt blanks, and finished hinges or hinge blanks, 1½ cents per pound (2½ cents).

Iron or steel blacksmiths' hammers and sledges, track-tools, wedges and crowbars, 1½ cents per pound (2½ cents).

Iron or steel axles, parts thereof, axle bars, axle blanks or forgings for axles, without reference to the stage or state of manufacture, 1½ cents per pound (2½ cents).

Horseshoe nails, hob nails and wire nails, and all other wrought-iron or steel nails not specially enumerated or provided for, 2½ cents per pound (4 cents).

Boiler tubes, or other tubes, or flues, or stays, of wrought iron or steel, 1½ cents per pound (3 cents).

Chain or chains, of all kinds, made of iron or steel, less than ⅜ inch in diameter, 1½ cents per pound (1½ cents); less than ⅜ inch and not less than ⅜ inch in diameter, 1½ cents per pound (2 cents); less than ⅜ inch in diameter, 2 cents per pound (2½ cents).

Hand, back and all other saws, not specially enumerated or provided for, 30 per cent. ad valorem (40 per cent.).

Files, file blanks, rasps and floats of all cuts and kinds, 35 per cent. ad valorem (4 inches long and under, 35 cents per dozen; over 4 inches in length and under 9 inches, 75 cents per dozen; 9 inches in length and under 14 inches, \$1.50 per

dozen; 14 inches in length and over \$2.50 per dozen).

Steel ingots, cogged ingots, blooms (slabs omitted), by whatever process made; die blocks or blanks; and bars and tapered or beveled bars; bands, hoops, strips and sheets of all gauges and widths, plates of all thicknesses and widths; steamer, crank and other shafts; wrist or crank pins; connecting rods and piston rods; pressed, sheared or stamped shapes or blanks of sheet or plate steel, or combination of steel and iron, punched or not punched; hammer molds or swaged steel; gun molds, not in bars; alloys used as substitutes for steel tools; all descriptions and shapes of dry sand, loam or iron-molded steel castings, all of the above classes of steel not otherwise specially provided for in this act valued at 1 cent a pound (4 cents) or less, four-tenths of 1 cent per pound (45 per cent. ad valorem); valued at more than 1 cent per pound and not more than 4 cents, 45 per cent. ad valorem (valued above 4 cents and not above 7 cents per pound, duty 2 cents; valued above 7 cents and not above 10 cents per pound, duty 2½ cents per pound; valued above 10 cents per pound, 3½ cents duty, provided that on all iron or steel bars, rods, strips, or steel sheets, of whatever shape, and on all iron or steel bars of irregular shape or section, cold rolled, cold hammered or polished in any way in addition to the ordinary process of hot rolling or hammering, there shall be paid ½ cent per pound in addition to the rates provided for in this act; and on steel circular saw plates there shall be paid 1 cent per pound in addition to the rate provided for in this act).

Iron or steel beams, girders, joists, angles, channels, car truck channels, T T columns and posts or parts or sections of columns and posts, deck and bulb beams and building forms, together with all other structural shapes of iron or steel, six-tenths of 1 cent per pound (1½ cents).

Steel wheels and steel-tired wheels for railway purposes, whether wholly or partially finished, and iron or steel locomotive, car and other railway tires or parts thereof, wholly or partially manufactured, 2 cents per pound (2½ cents); iron or steel ingots, cogged ingots, blooms or blanks for the same, without regard to the degree of manufacture, 1½ cents per pound (2 cents).

Screws commonly called wood screws, 35 per cent. ad valorem (2-inch and over, 6 cents per pound; 1-inch and less than 2-inch, 8 cents per pound; over ½-inch and less than 1-inch, 10 cents per pound; ¼-inch and less, 12 cents per pound).

Iron and steel wire and iron and steel wire galvanized and all manufactures of iron and steel wire and of iron and steel wire galvanized shall pay the duties now provided by law; *Provided*, That no such duty shall be in excess of 60 per cent. ad valorem.

Old copper and clippings from new copper fit only for remanufacture, 1 cent per pound.

Copper in plates, bars, ingots, Chili or other pigs, and in other forms not manufactured, 2 cents per pound (4 cents); in rolled plates called braziers' copper, sheets, rods, pipes, and copper bottoms, 30 per cent. (35 per cent.).

Lead ore and lead dross, ¼ cent per pound (1½ cents); lead, in pigs and bars, molten and old refuse lead run into blocks, and bars and old scrap lead fit only to be remanufactured, 1½ cents per pound (2 cents); lead in sheets, pipes or shot, 2½ cents per pound (3 cents).

Sheathing or yellow metal, 30 per cent. ad valorem; nickel, in ore or matte, 10 cents per pound on the nickel contained therein (15 cents duplicated); zinc, spelter or tutenague, in blocks or pigs, and old worm-out zinc fit only to be remanufactured, 1½ cents per



pound (1½ cents); zinc, spelter or tutenague in sheets, 2 cents per pound (2½ cents).

Hollow-ware, coated, glazed or tinned, 2½ cents per pound (3 cents).

Needles for knitting or for knitting and sewing machines, 20 per cent. ad valorem (35 per cent.).

Penknives, pocket knives of all kinds, and razors, 35 per cent. ad valorem (50 per cent.). Pens, metallic, 35 per cent. ad valorem (12 cents per gross). Type metal, 15 per cent. ad valorem (20 per cent.).

Manufactures, articles or wares, not specially enumerated or provided for, composed wholly or in part of copper, 35 per cent. ad valorem (45 per cent.); of iron, steel, lead, nickel, pewter, tin, zinc, gold, silver, platinum or any other metal, and whether partly or wholly manufactured, 40 per cent. ad valorem.

#### Amendments Proposed.

Section 5. That the following amendments to and provisions for existing laws shall take effect on and after the passage and approval of this act:

Section 6 of the act of March 3, 1883, entitled "An act to reduce internal revenue taxation and for other purposes," providing a substitute for Title 33 of the Revised Statutes of the United States, is hereby amended as to certain of the sections and parts of sections or schedules in such substituted title so that they shall be as follows respectively:

"Section 2499. Each and every imported article, not enumerated or provided for in any schedule in this title, which is similar, either in material, quality, texture, or the use to which it may be applied, to any article enumerated in this title as chargeable with duty, shall pay the same rate of duty which is levied on the enumerated article which it most resembles in any of the particulars before mentioned, and if any non-enumerated article equally resembles two or more enumerated articles on which different rates of duty are chargeable, there shall be levied on such non-enumerated article the same rate of duty as is chargeable on the article which it resembles paying the highest rate of duty; and on articles, not otherwise provided for, manufactured from two or more materials the duty shall be assessed at the rate at which the (dutiabie) component material of chief value may be chargeable; and the words 'component material of chief value' whenever used in this title, shall be held to mean that (dutiabie) component material which shall exceed in value any other single component material found in the article; and the value of each component material shall be determined by the ascertained value of such material in its last form and condition before it became a component material of such article. If two or more rates of duty shall be applicable to any imported article it shall pay duty at the highest of such rates: *Provided*, That any non-enumerated article similar in material and quality and texture and the use to which it may be applied to any article on the free list, and in the manufacture of which no dutiable materials are used, shall be free of duty."

A naphtha reservoir is to be constructed in the harbor at Odessa at a cost of 2,500,000 roubles. It will have a projecting sea wall 1200 yards in extent. Into this reservoir the oil will be hydraulically pumped direct from the tank holds of the specially constructed petroleum vessels running between Odessa and Batoum.

The Tin Mountain Company, of Chicago, of which H. W. Fowler is general manager, have been advised by the superintendent of their mines and mill in Dakota that a carload of tin concentrates was shipped on

the 23d ult. for Chicago. This will be converted into pig tin as soon as it arrives, and it is expected that it will be followed by shipments at regular intervals hereafter. The severe winter interfered with operations at the mines or shipments of concentrates would have been made much earlier.

#### The South Chicago Steel Works.

The South Chicago works of the North Chicago Rolling Mill Company are now in full operation, with the exception of one blast furnace. The stoppage of the steel works and rail department in December and January enabled the machinery to be thoroughly overhauled and put in complete order, so that the production is now above the average of the previous run. This is being done without any pushing or forcing, and it could be considerably exceeded if the demand for rails was brisk enough to warrant it. Under present circumstances the entire product of the three blast furnaces in operation is easily handled by the finishing department, in addition to a daily contingent from the stock of pig iron which accumulated in December and January. The metal from the blast furnaces is taken every week-day directly to the steel works without being cast into pigs and remelted. In fact, the raw materials entering into a steel rail do not get cold after they are thrown into the blast furnace until the completed rail lies in the hot bed awaiting the straightener. Although the blast furnaces are some distance from the steel works, no difficulty is experienced in handling the liquid metal. Railroad tracks extend up along the side of each casting house as closely as possible to the furnace, being on a lower level than the floor of the casting house, so that the metal can flow through runners directly into ladles mounted on trucks and arranged on trunnions for tilting and pouring. A small locomotive draws the trucks up an inclined railway into the steel converting department and in front of the converters, of which there are three, each having a nominal capacity of 10 tons, although they are now blowing 10½ tons. The casting houses of the blast furnaces are not ordinarily in use, but on Sunday casts are regularly made, as at other furnaces. The pig iron cupolas connected with the works have a capacity of 500 tons a day, which is ample for handling cold metal on Monday or for adding to the supply of metal when the blast furnaces are not turning out enough to run solely on the direct process.

The furnace which is out of blast is No. 8. It has been running for 20 months and was blown out partly because its product is not now urgently needed, and partly because the supply of ore is not sufficient to run all four furnaces until navigation opens. Its lining is in excellent condition, but new boshes and hearth will be put in, and the furnace will then be ready for use when needed. The four furnaces connected with these works turn out an average of 6000 tons of pig iron weekly without being pushed to their full capacity. This requires so much ore that it is difficult to provide room for a six months' supply within easy reach of dock and furnace, which must be done when depending entirely on lake navigation. Should the demand for steel rails require these works to be pushed to their utmost throughout an entire winter, it would seem highly probable that the railroads would be called upon to help out the season by hauling ore direct from the mines to the works.

Soaking pits are not used in these works for equalizing the heat of ingots, but gas heating furnaces are employed with very satisfactory results. The ingots now cast are large enough for five 60-pound rails. When cool enough to handle they are taken to the heating furnaces and thence to the blooming mill. The blooming mill is

three-high, with 40-inch rolls, and its table connects directly with rollers leading in a straight line to the rail, which is a two-high reversing train. The blooms are not cut, but run on to the rail train and are rolled in five rail lengths or very close to 160 feet, including crop ends. Rails of this length were first rolled on this mill in August last, and have been made regularly since then. The distance between the blooming mill and the rail train and between the rail train and the saw is too short to take this extreme length, and a switch or gutter has accordingly been built to the side of the housings of each train, into which the rail runs when it has been rolled out. Two men and a boy run the rail train, accomplishing this feat with remarkable ease, notwithstanding the unusual length of the rail.

The company have recently added a foundry, machine shop, carpenter shop and blacksmith shop to their plant, and find great advantages in controlling much of their repairs and in even getting up new work for which they were formerly obliged to call upon outside parties. In their foundry they now make all their ingot molds, as well as miscellaneous castings for various departments of the works. The foundry is already too small for the demands upon it and will shortly be considerably enlarged. The machine shop and carpenter shop are furnished with some of the most indispensable tools, but they have not yet been fully equipped owing to the delays of the machinery builders. The engine running these two shops was built by the company and is of a peculiar type, being a steeple compound condensing engine, having a 10-ton fly-wheel running directly on the main overhead shaft. All the shops are built substantially of brick, are well lighted and are supplied with incandescent electric lamps for night work.

This plant is situated 12 miles from the business center of Chicago, and occupies an eligible location on the shore of Lake Michigan, possessing special transportation advantages, both by water and rail. When it was started, about six years since, South Chicago was a village of 500 inhabitants. Now quite a city has sprung up, the population ranging above 10,000. This growth is due almost entirely to the establishment there of these works, as no other interest employing any considerable number of workmen is located in the immediate vicinity.

#### United States Naval Progress.

Reports recently made to the Navy Department indicate the progress made so far in the work on the new war ships.

At Cramps' Sons, Philadelphia, the gunboat Yorktown is about ready for launching, and the dynamite gunboat will be ready in March. The boilers for the Yorktown are finished and the engines are well advanced. The cruiser Baltimore has about all of her frames up and plated. The decks are laid, and, if material is forwarded from the iron mills, it is probable that this vessel will be launched some time in April. The Newark and Philadelphia are making slow progress, the lack of material acting as a bar to rapid work. Material, however, for both of these ships is being received, and the work of construction will go on more freely as soon as some indispensable preliminaries are settled. From Chester Constructor Steel reports that work on the Bennington and the Concord is progressing favorably, but not as rapidly as could be desired. They are, by contract, to be completed by May, 1889, but it is thought that neither of them will be ready for the water at that date. The keels of both these gunboats will be laid by March 10. The gunboat Petrel, under construction at Balti-

more, is progressing slowly. This vessel was to have been practically completed by December 22, but it will be some time before the Government will be able to take any steps toward fitting her for sea. The Columbian Iron Works, contractors for this vessel, have made a formal application to the Secretary to be relieved from the penalties for failure to complete her within the contract time.

From New York Assistant-Constructor Hanscom reports that the preliminary work on the armored cruiser to be built at that navy yard is in a fair state of forwardness. Her lines have already been laid off in the mold loft, and the blocks and platforms are in place for building the ship. Tools and general plant, as well as material, have already been contracted for, and as soon as the machine shop and storehouse are completed the various details will begin to assume shape. It is not probable, however, that much will be done in the way of actual construction before July or August next. The preliminary steps for the two gunboats to be constructed at New York are still in embryo, but the spring will probably see rapid progress in their erection. The Chicago, having undergone a most successful power trial, is waiting for orders from Washington to be fully completed and fitted for sea. The Boston is practically completed, but has only a portion of her battery on board. It will, it is said, require additional appropriation to complete the ship, armed and equipped ready for sea. The Boston and the Atlanta are in commission, and the latter craft will probably sail for the West Indies as soon as the work found necessary on her bottom shall have been completed.

The armed cruiser in process of building at Norfolk Navy Yard, Va., is in pretty much the same condition as the similar vessel at the New York yard. Progress on both of these huge vessels will be necessarily slow. These two ships, to be built at the New York and the Norfolk yards, will be the largest vessels in the navy. They will be named the Maine and the Texas. The Charleston, at San Francisco, is progressing very favorably, and were it not for the unexpected delay in the shipment of material from the East the contractors for this vessel would be well abreast of the terms of the contract. As it is, the Charleston will be among the new ships to be finished long after the date specified in the contract. The San Francisco is still in the future, as far as actual work is concerned, and it will be many months before she is launched. From all the contractors the complaint comes that material is not supplied fast enough by the rolling mills.

The great strike on the Chicago, Burlington and Quincy Railroad has but a slight effect on the general business of the cities and towns located on its line compared with the results that would have followed such a strike but a few years ago. So many railroads now permeate every part of the country through which that road passes that very few towns are completely deprived of commercial facilities by the non-running of their freight trains. For instance, it has recently been ascertained that in the whole State of Iowa there are but two points that are more than 15 miles from a railroad. Much inconvenience is experienced on account of this strike, but there is no paralysis.

Quite a trade has sprung up in the shipments of Lake Superior iron ore for "fix" rolling mills in the Central Western States, which were formerly supplied from Missouri or other localities. This trade is handled entirely by rail from the mines to the mills, favorable rates of freight having been secured. Pickands, Brown & Co., of Chicago, pig iron and iron ore dealers, are

the leaders in this movement and are strong believers in the ultimate diversion of a large part of the Lake Superior iron ore trade from the lakes to the railroad.

### The Salem Water Motor.

The Salem Foundry and Machine Shop, of Salem, Mass., are building an improved form of water motor, of which we publish engravings on this page and the one opposite. The engine supplies a limited power with small first cost, requires no skilled attendant, entails no danger, and, in short, appears to satisfy, in a great measure, the requirements of a satisfactory domestic motor. It is specially designed to supplant foot or hand power—say for lathes, church or house organs, printing presses, sewing machines, elevators, light wood-working machinery, &c.

The details of the engine are clearly shown in the sections and plan on the next page. There are, strictly speaking, four single acting cylinders within a cas-

moved by the right-hand piston-rod. The arm by which the valve *v* is moved is attached near the pivotal center *k'*, while the valve *v* has its arm, *M'*, attached near the circumference. This arrangement gives the reverse action of the valves necessary to the proper working of the pistons without the crossing of the water ducts leading to the outer ends of the cylinders. A portion of each valve is raised, making a box or shell, with the under side open, having a flat flange working water-tight. These valves shut at all times the direct passage of water from the valve-chamber to the outlet-ports *O O*, but permit, as they vibrate, the alternate flow from the valve-chamber through the cylinder-ports *o o'* and *o'' o'''* to the ducts *h* and through them to the cylinders; thence, after acting upon the pistons, returning by the same ducts and through the valve-shell, which would then be in position to receive the flow, the fluid passes through the middle ports *O O* to the outlet *G'*.

In operation the position of the pistons is such that when one is at its "dead-

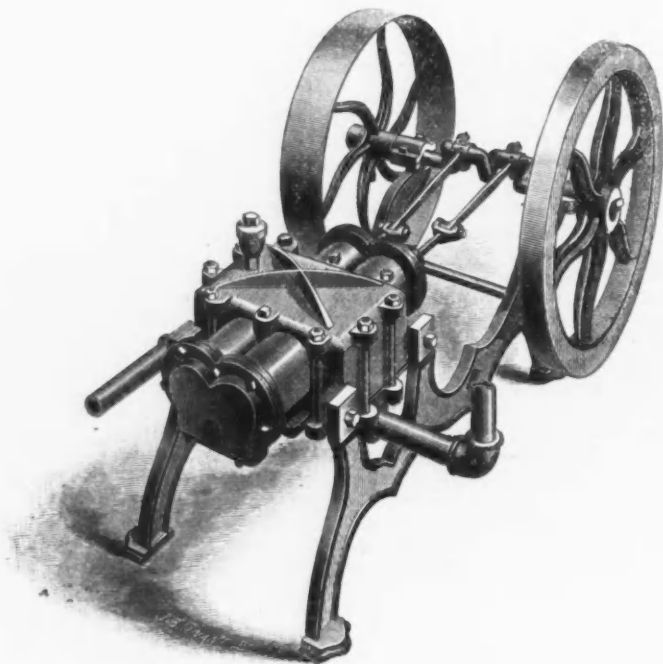


Fig. 1.—General View.

WATER MOTOR, BUILT BY THE SALEM FOUNDRY AND MACHINE SHOP, SALEM, MASS.

ing, *F*, the middle part of which is occupied by a valve-chamber, *A*, in which the valves *v* and *v'* work. The pistons *P P* in each of the two sets of cylinders *C* are on one rod, *B*, both rods working an ordinary crank shaft, as shown in the general view. The water under pressure enters through the inlet *G*, Fig. 2, and passes into the valve-chamber *A* through the openings *H H*. Thence it flows into the different cylinders through the port openings *o, o', o''* and *o'''* and ports *b*. Exhaust takes place through the different port openings just referred to, the exhaust ports *O O* and the outlet *G'*. All the ports are in the form of sections of a circle, and are opened and closed by shell-shaped oscillating valves covering an area of about five-twelfths of the circle of which the ports are sections. They oscillate on what would be the centers of the circles, represented by the screws *k* and *k'*, and are moved by the arms *M* and *M'*. These arms in turn are moved by grooved collars *L* and *L'* and pins *D* and *D'*. Both valves oscillate in the same direction from their centers. The valve *v'*, for the right-hand ports, is moved by the left-hand piston-rod and the valve *v*, for the left-hand ports, is

point" the other is moving with most power and motion. Fig. 2 shows the pistons in such a position. The left-hand pair of pistons is at the highest point and its crank at dead-point. The right-hand pair is then at the middle of its stroke. The left valve is in a position half-way between the opening of the cylinder port *o* to the inlet or valve chamber, and the closing of cylinder port *o'*, both ports being for an instant shut off from both outlet and inlet. While the pistons are thus nearly at rest, the valve is being rapidly changed by the quick motion of the right-hand piston-rod. The left-hand piston-rod being at its highest point, the valve *v'* is also raised by its arm, and the cylinder port *o'''* is full open to the inlet chamber, the water passing to the bottom of the right-hand cylinder *C* and forcing the piston upward. The cylinder port *o'* is at the same moment covered, giving the fullest outlet from the upper cylinder *C* to the common outlet *G'*. It will be noticed that the water in the valve-chamber *A* has practically no effect upon the sides of the pistons facing this chamber, because it acts on all equally. The reciprocal actions of the pistons thus operate



upon each other, giving an even rotary motion.

The motor is made of specially large sizes where required, and where the low cost of water warrants their use. It is already in extensive use, and, we are informed, is giving very satisfactory results.

## Recent Legal Decisions.

### LIABILITIES OF ESTATE FOR DEBTS OF PARTNERSHIP.

A decision of great importance to persons carrying on business in copartnership has just been handed down by Mr. Justice Dykman, of the Supreme Court, at White Plains, Westchester County, which appears to be the first actual disposition by the courts of this State of the questions involved. The facts are that in

such child leaving issue, the share upon which the parent of such issue would be entitled to interest as aforesaid should be immediately paid over to such issue absolutely. In the will no mention was made of the partnership business of S. S. Hepworth & Co., and no authority was given the executors or trustees in respect to the same. There was the usual clause revoking all other wills. Mr. Colwell died in the following May (1882), whereupon his will was admitted to probate and the executors and trustees qualified and entered upon their duties. Mr. Hepworth assumed control of the partnership business under the clause in the agreement referred to, and proceeded to continue its operations as before. Upon an accounting then had it was found that Mr. Colwell's interest in the firm amounted to about \$50,000, which was allowed to remain in the business by the executors, under the belief that the agreement to continue the same was unquestionable. Mr. Hepworth continued the business under the same name as before the death of Mr. Colwell

statute having prescribed means for doing so by will. The court has decided that the position taken on behalf of the executors of Joseph Colwell was the correct one, and that the estate is not liable for any debts incurred by Mr. Hepworth subsequently to Mr. Colwell's death. The result preserves for Mr. Colwell's children the large estate which otherwise would have been absolutely exhausted.

### PRINCIPAL AND AGENT—RIGHT TO BORROW MONEY.

E. Bickford was appointed the agent in New York of the house of Chocolate Menier, of Paris. He took an office in Beaver street, cleared the importations, and sold the goods, and for ten years, until 1882, he continued this business in the name of Edward Bickford. He sold chocolate and other manufactured goods of the Paris house on a salary, keeping books of account and bank accounts in his own name, rendering accounts to the London agent of the house, one G. In 1878, 1879 and 1880 Bickford's

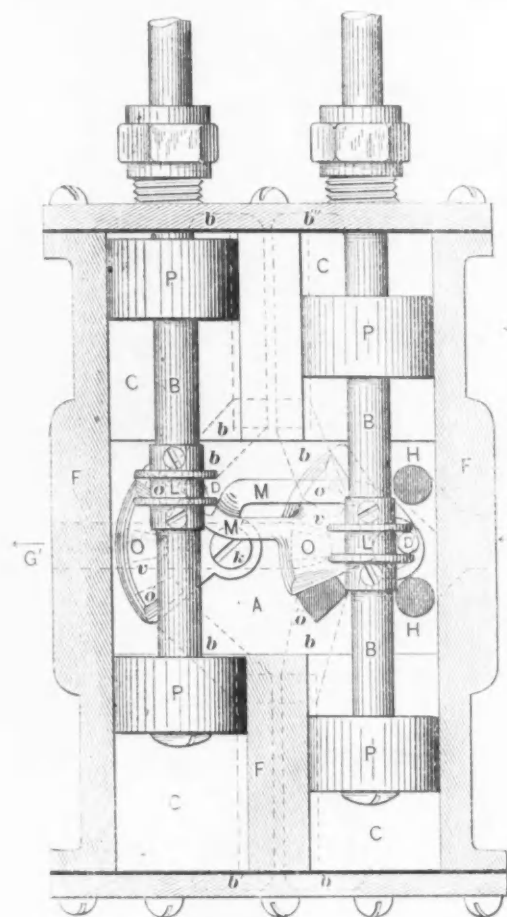


Fig. 2.—Horizontal Longitudinal Section.

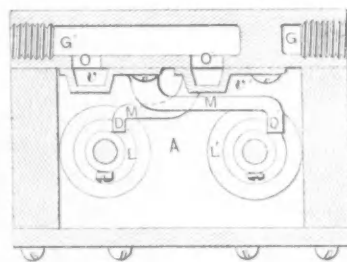


Fig. 4.—Cross Section of Valve Chamber.

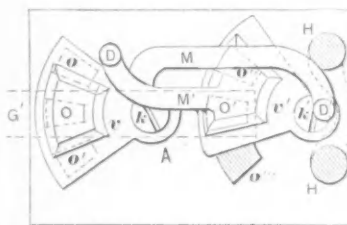


Fig. 5.—Plan of Valves and Valve Seats.

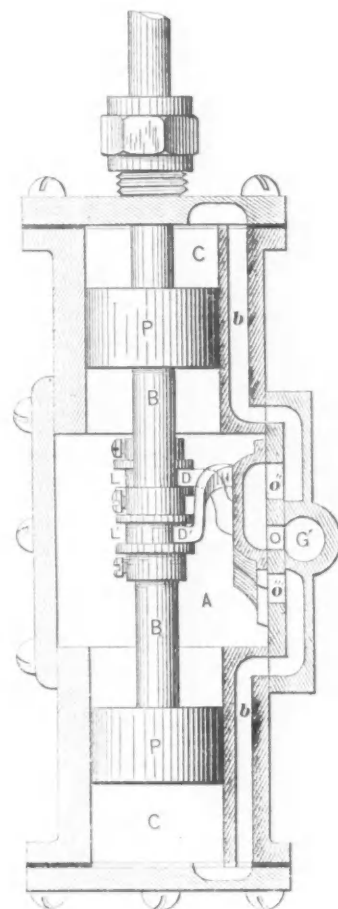


Fig. 3.—Vertical Longitudinal Section

### WATER MOTOR, BUILT BY THE SALEM FOUNDRY AND MACHINE SHOPS, SALEM, MASS.

1877 Samuel S. Hepworth and Joseph Colwell entered into copartnership in New York city to manufacture centrifugal machinery for use in sugar refineries, for a period of five years, under the name of S. S. Hepworth & Co. The business of the firm grew rapidly and it soon became one of the largest of its kind in this country. Shortly before the expiration of the term for which the firm was organized, Mr. Colwell became ill and it was apparent that his life would soon terminate. During this illness, which resulted in his death, a further agreement was entered into between the two partners, wherein, among other things, it was provided "that in the case of the death of either partner the business should be continued by the survivor for a period of five years from the 1st day of February succeeding such death, the estate of the deceased partner to have the same share and interest in the profits and bear the same share of the losses of the business as would have been received and borne by the deceased partner had he lived." Following the execution of the agreement, and about 30 days later, Mr. Colwell made and executed his last will and testament, wherein, after several small bequests, he devised the residue of his estate, amounting to about \$150,000, to certain trustees, to be divided into three shares and the interest thereon to be paid to his three children during their lives, and upon the death of any

until October last, when he was compelled to make an assignment in insolvency, which he did, with liabilities of about \$500,000 and nominal assets of about one-half that amount. The liabilities were all incurred subsequently to the death of Mr. Colwell. Immediately upon the assignment being made public and the condition of the business becoming known to the creditors, to whom it was apparent that little or nothing could be recovered from the business, steps were taken to realize upon the assets of the estate of Mr. Colwell, the deceased partner, under the above quoted agreement to continue the business, and a large number of suits were brought against the Colwell executors for that purpose. The first of these suits to be tried was brought by Stewart Bros., of Yonkers, to whom a number of other claims had been assigned in order to sue them all in one action. Messrs. Prime, Prime & Burns, of Yonkers, represented the plaintiffs. The executors of the Colwell estate, through Messrs. Ellison, Gill & Porteous, of New York, appeared and defended the suits upon the ground, among others, that so much of the contract as attempted on the part of Mr. Colwell to provide for the management, continuance or control of the business after his death was invalid, for the reason that the law does not permit a person to make any provision by contract for the management or disposition of his property after his death, the

sister lent him \$6000 as the agent of the house of Chocolate Menier, but she had had no communication with the house about lending this money on their credit. She seemed to assume from the character of the authority exercised by her brother as agent that he had power to borrow money for their use. Bickford had no power of attorney authorizing him to borrow money for the house, nor any verbal authority to do so. Bickford applied this money to remittances to Paris, in payment of his accounts with the house. Upon a refusal to pay this money, so loaned, an action was brought against the house—Bickford vs. Menier—and the jury gave the plaintiff a verdict, and the judgment entered thereon was affirmed at the general term, but the Court of Appeals reversed it. The chief judge, Ruger, in the opinion, said: "A principal is bound only by the authorized acts of his agent. This authority may be proved by the instrument which creates it, and beyond the terms of the instrument or the verbal commission it may be shown that the principal has held the agent out to the world in other instances as having an authority which will embrace the particular act in question. There is no other way to bind the principal when he disputes the authority. It appears in this case that the authority of Bickford was to receive the property, store and sell it. An implied power may be derived

from the express power mentioned to apply such part of the proceeds of sale as was necessary to pay his salary and legitimate expenses required in carrying on the business. It follows as a necessary consequence that it was his duty to remit the balance to his principals. There is certainly nothing in the performance

#### The Porter Heavy Duty Engine.

The Porter Mfg. Company, Limited, of Syracuse, N. Y., have brought out a new heavy duty engine specially designed with a view to economy, durability and

bills, the engineer's bills, the repair bills, the value of the time lost in breakdowns or stoppages, for a year or a series of years, all added together and divided by the horse-power furnished during that period. Considered from this point of view the

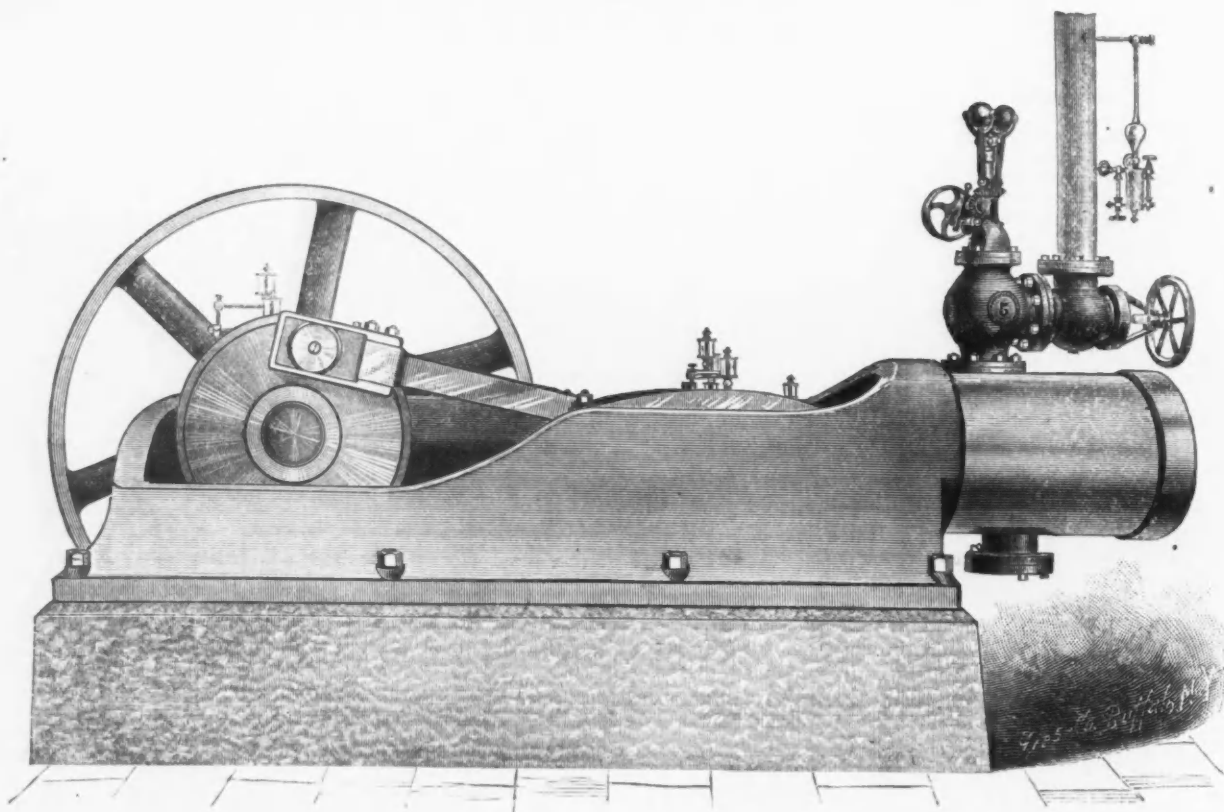


Fig. 1.—Front View.

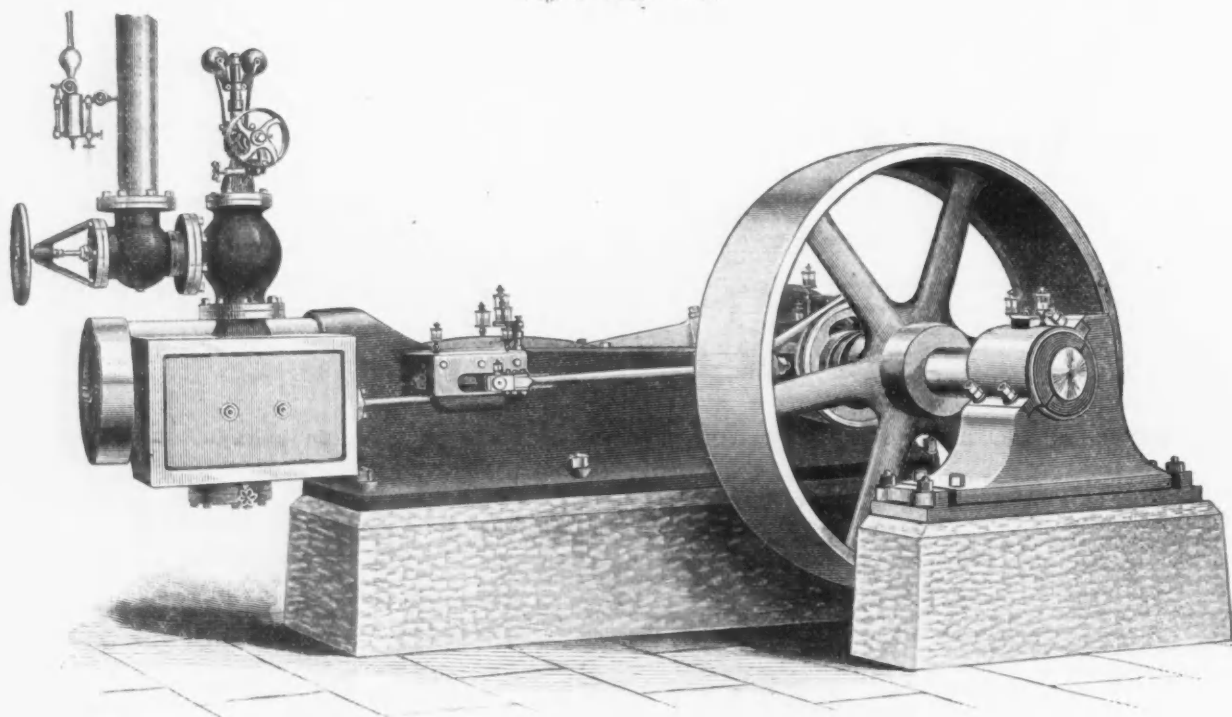


Fig. 2.—Rear View.

HEAVY DUTY ENGINE, BUILT BY THE PORTER MFG. COMPANY, LIMITED, SYRACUSE, N. Y.

of these duties which rendered it necessary that Bickford should borrow money on the credit of his principals. It is idle to argue that an authority to borrow money may be implied from a naked power to receive and sell property and remit proceeds. The duties of an agent in such a case are analogous to those of a factor, and it is well settled that such an agent has no authority to borrow money in the name of his principal."

low cost. The engravings which we publish very clearly illustrate the main features and require little description.

In the matter of economy the builders appropriately point out that economy does not mean always the least number of pounds of coal per horse-power developed by an engine, but it does mean the coal

Porter engine, which we illustrate, appears to promise a high degree of satisfaction. It will be noticed at once that the engine is of the throttling type, though when desired it is fitted with a shaft governor and thus rendered automatic. The massive frame speaks for itself. The bearings have a length equal to the diam-



eter of the cylinders, and the shaft, which is of hammered steel, has a diameter of half the cylinder bore or more. From Fig. 3, which represents horizontal and vertical sections of the cylinder, valve and valve-chest, a fair idea will be gained of the nature of the design. The oiling of the crank-pin is accomplished by a device in the working of which the oil is dropped from a sight feed cup into an annular ring cast slightly eccentric in the back of the crank-plate, from the deepest part of which a straight hole is drilled to the center of the crank-pin surface. Centrifugal force thus distributes to the wrist whatever amount of oil may be delivered from the cup as it drops. The main bearing is lined with special babbitt metal, and is formed in the bed in such a manner that the shaft bearing is practically buried in a solid mass of iron.

The cylinder is covered with asbestos and wood, and this again with a metal jacket. The guides and crosshead have large, flat, wearing surfaces, with means

rial Arsenal by the erection of a 6-ton Radcliffe furnace for the purpose of manufacturing steel for shipbuilding purposes, as well as for guns, shells, &c. The new plant, which stands in close proximity to the plate mills and hammer shops, is contained in a building 130 feet long by 100 feet wide, and it has been in course of erection about 15 months, under the superintendence of Mr. Lewis. The furnace was purchased for the Minister of Marine by Husni Pasha when in London at a very reasonable cost. The first tapping took place on the 19th inst., when the furnace was charged with 5 tons of material at 2 a. m. and tapped at 10 a. m., taking eight hours to produce the 5 tons of steel. The second trial was made last Saturday, the 24th, in the presence of Hassan Pasha, Minister of Marine, to whom is due in a great measure the success of the undertaking. Hakki Pasha, Husni Pasha and many other officers were present. The steel has been worked and found to be very superior in quality. The next step will be the

stantaneously and effectively to accomplish its nefarious ends; and it does all this not for the advancement of the community and the nation, but for the purposes of extortion and for the annihilation of independent firms." To hold these trusts accountable, they should be legally recognized, and required to file their annual statements at Albany, as in case of all incorporated companies. Otherwise the public have no adequate protection.

Private ownership in dock property in New York City is the great bar to any system for the improvement of the waterfront and gives rise to many abuses. To remedy the evil a bill now before the Legislature authorizes the Dock Department to acquire in the name of the city, for the purpose of improvement of the waterfront under any plan now existing or that may hereafter be legally adopted, any and all property to which the city has no right or title, either by purchase or by

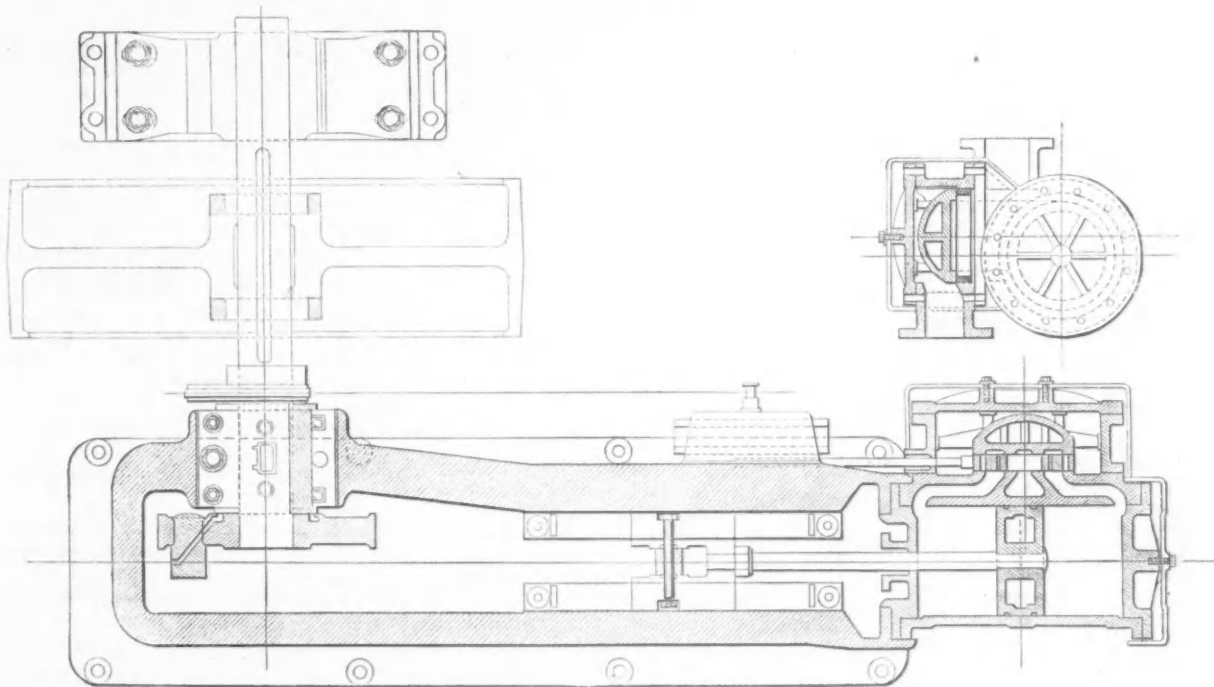


Fig. 3.—Horizontal and Vertical Sections of Cylinder and Valve.

HEAVY DUTY ENGINE, BUILT BY THE PORTER MFG. COMPANY, LIMITED, SYRACUSE, N. Y.

of adjusting the top and bottom guides. The crank disk is made as narrow as safety will admit, is counterbalanced and has a back plate connecting the entire crank, thereby preventing springing. The cross-head wrist and crank-pin are made of hammered steel, with generous working surfaces (one-quarter of bore in length and larger in diameter). The connection-rod is of hammered iron, with steel boxes and lined with special babbitt. The valve is a flat balanced valve, with double steam ports, and is provided with a means of taking up wear. The pillow block is very massive and at the same distance from the bottom to the center as the main bearing; it can be reversed to accommodate the belt pull.

The builders have adopted a special arrangement of eccentric in place of the link motion for reversing their engine when intended for rolling mill use. The 14 x 20 engine runs at a speed of 230 rotations per minute, and, with a mean effective pressure of 40 pounds, is rated at a little over 140 horse-power.

The *Levant Herald* of December 28, 1887, has the following: "An extensive addition has lately been made to the Impe-

molding process, when they will be able to cast stems, sternposts, &c., for the ships under construction."

The recent investigation verifies in every particular the following legal definition of a trust, given in a recent work by Mr. W. W. Cook of the New York Bar: "It is neither a combination nor a well-defined common law trust; it avoids the checks and safeguards which a wise public policy throws around corporate acts; its articles of agreement are secret and jealously guarded even from the investor himself; no charter or statements need be filed for public inspection; no reports need be made or published; it may carry on any business it desires; the principles of *ultra vires* acts do not check it; no limit is placed by statute on its capital stock; no law prevents an increase or decrease of its trust certificates; no qualifications are prescribed for its trustees; no tax is laid on its charter or franchise or capital stock; no limit is placed by the public on the power and discretion of its trustees; no publicity is given to its acts. It may move from State to State; it may evade taxation and defy the powers of courts; it wields vast sums of money secretly, in-

process of law. Three commissioners of appraisement, appointed by the Supreme Court, shall have power to take testimony, hear allegations and to determine the compensation "which ought justly to be made by the city of New York to the owners or persons interested in the property acquired or extinguished by said proceedings." Their report shall be final and conclusive when confirmed except an appeal be taken to the Supreme Court at the General Term. Whether private rights are adequately protected remains to be seen. About one-third of the waterfront remains to be acquired.

The boats used on the Pennsylvania Railroad ferry across the Hudson River at New York have all been supplied with the Williamson steam steering apparatus. This is also to be put on the ferry-boats of the Hoboken Land and Improvement Company.

The big British war ship *Imperieuse*, a ten-gun cruiser of the first class, is now under inspection, being practically useless at sea because she will not mind her helm under steam.

## THE WEEK.

Canadians are jubilant over the clause in the new tariff bill placing timber on the free list. Last year Canadian exports to the United States were valued at nearly \$8,000,000, and the removal of the present duty of \$2 per 1000 feet would enable lumbermen to market lower grades estimated to equal 10 per cent. of the whole cut, and which are now left to decay in the woods.

Over \$2,500,000 were invested in new buildings in Superior City, Wis., last year. Being some 300 miles further into the great wheat, pine, and iron country than Chicago, she aspires to the rank of "Queen of the North and Northwest." She is becoming an important railroad center and point of distribution for coal. Her three coal docks already have a capacity for handling almost 1,000,000 tons a year.

The estimates of Canadian expenditure for the next fiscal year amount to \$23,250,000.

The new parcels post treaty between the United States and Canada went into effect on the 1st inst.

A company with \$12,000,000 capital propose to introduce natural gas into Chicago.

The longshoremen and dock laborers, representing all sections of the United States and Canada, formed an international union in this city last week. The by-laws adopted disapprove of strikes, which will not be entered upon unless imperatively necessary. The present rate of wages in this city, New Jersey and Brooklyn was considered, and the delegates agreed that it was insufficient, and that the steamship companies be requested to increase the rates to 30 cents for day work and 60 cents for night work.

It is authoritatively stated that more transfers of real estate in New York City were recorded during the past month than in any previous winter month since the Real Estate Exchange was organized. The sales at auction outnumbered by nearly two to one the sales of February, 1887. In rents this spring few reductions are reported, and there is no general falling off in rates.

A correspondent of the London *Times* supplies a remarkable illustration of the quality of the alleged laboring men who seek relief in that city. They always claim to be out of work and to be requiring aid only till they find employment. Some excellent persons tried not long ago to help these unfortunates by concerted action. They picked out a hundred of them to be restored if possible to the useful walks of life. It was first necessary to inquire into their habits, whether they were temperate or intemperate, industrious or indolent, on the whole good or poor material. Only four out of the hundred passed the ordeal satisfactorily. Three out of this four resisted a minute investigation of their previous history. The fourth man alone was set to work and proved a failure. The result of this thorough and impartial experiment is not encouraging to those who urge that the State should provide work for the unemployed.

Work on the great Midland Hotel in Kansas City has been in progress for a year, and when complete the building will cost \$1,000,000. Last week, while a portion of the heavy trussed iron roof was being placed in position, the supports gave way and the building was badly wrecked. Two workmen were buried in the ruins.

The conclusion of the fisheries negotiations was celebrated by the Canadian Club of New York on Friday evening at a banquet of 200 guests. Mr. Chamberlain,

Mayor Hewitt, the British Consul General, Mr. Foster, the Canadian Minister of Finance, the president of the New York Chamber of Commerce and other prominent men participating. In response to a toast, Mr. Chamberlain, the special envoy from Great Britain, said: "There has been no surrender at all on either side in anything that national interest demanded that we should maintain. Both sides have substantially gained what they contended for, and the only concessions which have been made are the concessions made by honorable men to settle a difficulty between friends and not to gain an advantage over either." To the same effect Mr. Chamberlain said in his dispatches to the British Foreign Office, now published: "In the course of the discussion it became evident that there existed a substantial agreement on the main facts of the case, and that while on the one hand the United States was ready to recognize the right of Canada to guard the interests of her fishermen and withhold any of the special advantages conferred by the proximity of her ports and harbors to the common fishery grounds, on the other hand the Canadian Government was ready to afford all possible convenience and assistance which the claims of humanity or the courtesy of nations justify, provided the concessions were not abused or construed into a surrender of the privileges essential or important to the successful prosecution of the fishing industry."

A bill has been prepared by Mayor Chapin, of Brooklyn, and approved by Mayor Hewitt, providing for the appointment of three bridge trustees, to succeed the present cumbersome board, the president to receive \$5000 per annum and the others to serve gratuitously, one to go out every year. A board, composed of the two mayors, the controllers of the two cities, and the trustees, are to determine the amount of money to be expended in the maintenance and improvement of the bridge.

The Chinese must go. A resolution reported on Wednesday by Mr. Sherman from the Committee on Foreign Relations, requesting the President to negotiate a treaty with the Emperor of China containing a provision that no Chinese laborer shall enter the United States, was taken up, and, after some discussion, adopted.

Mr. Belmont, under instructions from the Committee on Foreign Affairs, called up the joint resolution accepting the invitation of the French Republic for the United States to take part in the International Exhibition to be held in Paris in 1889. After some debate the resolution was passed; also the joint resolution authorizing the President to arrange for a conference in Washington, in 1889, for the purpose of promoting arbitration and encouraging reciprocal commercial relations between the United States and South American republics.

Recent large purchases of real estate in Philadelphia are interpreted as an indication that the Reading Railroad Company contemplate bringing their line into the heart of the city on an elevated railroad, with a grand depot at Market street and Twelfth street.

The demoralization of export rates on the great freight lines between the Northwest and the seaboard, in which the European steamship lines have taken an active part, has ended. This is the important announcement of Commissioner Fink, as the result of a full meeting of the trunk line Executive Committee just held in this city. It was agreed that "pro-rating" and special rates should cease March 5, to give place to a new basis of absolute rates. Instances were cited where through rates from interior points to

Europe were less than from the same point to New York City. To prevent irregularities in the future, such as false billing and underweighing, Commissioner Fink was directed immediately to establish his bureau of inspection at all the Western termini of the trunk lines, so that not one pound of freight shall be allowed to go Eastward save under clean bills of lading. Surprise will be felt if this determination shall be faithfully adhered to for any considerable period.

The proposition to exclude immigrants by imposing a heavy fee for consular passports rouses the ire of one of our commercial journals. The writer contemplates with alarm the consequences of such a measure, and combats a contribution to the *Century* as follows: "He is appalled to discover that within the last 30 years 7,500,000 foreigners have come here to live, and that they and their children now number 15,000,000, or one-fourth of our entire population. From these statistics we see how much we owe to immigration. It is to-day one of the proudest boasts of the republic that, after little more than a century of life, her census reports over 60,000,000 inhabitants. To these she owes her position before the world. Cut them down one-quarter and it is not rash to say that her relative rank in agriculture, manufactures, mining, commerce and all forms of industrial enterprise as compared with the rest of the world would be reduced not less than 25 per cent. We are also told, as if of something dreadful to contemplate, that already nearly 32 per cent. of our mechanical laborers are immigrants. We had not realized that our indebtedness to them was so great. Imagine how poorly this country would get on with one-third less of the present supply of mechanics. No facts could more completely refute the crude theory of immigration by passport." Consistently with the views presented in the foregoing the New York Chamber of Commerce last week passed resolutions declaring that immigration is indispensable to the national prosperity.

The following comparison of prices of Georgia cotton mill shares at the beginning of the respective years is extracted from a circular issued by Mr. Thomas Barrett, Jr., broker:

	1886.	1888.
Augusta factory.....	85	112
Grantville factory.....	95	150
J. P. King factory.....	65	105½
Sibley factory.....	52½	101
Langley factory.....	90	109
Enterprise factory (com).....	20	55

The latest addition to the flourishing family of trusts is the French Silvered Plate Glass Trust. The trust or pool is formed by Messrs. Semon Bache & Co., Heroy & Marrenner, A. Noel, Van Praag & Co. and Rieser & Co., who are the largest manufacturers of French plate mirrors. The glass is imported plain and silvered here at the manufactories of the members of the pool. Previous to the combination each importer had his own scale of prices and discounts, but, as soon as the combination was effected, all schedules of prices were called in and rates went up. The method of doing business is similar to that of other trusts. Each importer reports the amount of glass silvered at his factory to the secretary, W. W. Heroy, of Heroy & Marrenner, and his account is settled on the basis of last year's business.

The franchise and plant of the Vesey street and South Ferry surface road, in this city, was sold for \$270,000.

The new steel steamship building by the Cramps for Wm. P. Clyde & Co. is already considerably advanced, and the machinery for the new Sound steamer Connecticut is nearly completed.

Philadelphians are mystified by a traction engine "9 feet long" just imported from Europe, and which is said to be in successful operation in New Zealand. The



parties interested will not say whether the motor is run by steam, electricity or Inventor Keely's patent, but think it will revolutionize the street-car business of this country.

M. de Lesseps concedes that owing to unexpected difficulties the Panama Canal can hardly be completed in 1889. The directors agree to the construction of locks, by means of which vessels of the largest tonnage may traverse the canal in 1890, before the work is absolutely completed.

The grain trade of Baltimore for the month of February shows a large decline, compared with the corresponding month of 1887.

By the opening of the Mexican International Railway on the 1st inst. the time between New York City and the Mexican capital is reduced 24 hours, and the distance shortened 553 miles. The event excites much interest in commercial circles in Mexico, particularly as affecting traffic through Vera Cruz, which thus encounters a strong competition. The International runs through rich mineral and agricultural country from Piedras Negras, opposite Eagle Pass, Texas, to Torreón, on the line of the Mexican Central Railway. It was built by C. P. Huntington and associates without a dollar of subsidy from the Mexican Government. It is practically part of the Southern Pacific system. The road passes through the coal deposits in Northwestern Mexico, acquired by Mr. Huntington some years ago.

Prosper Huerne, a well-known civil engineer of this city, has commenced suit in New York against H. B. Slaven, the Panama Canal contractor, to recover 5000 shares of stock of the American Contracting and Dredging Company, out of which he claims to have been defrauded by Slaven. The suit involves several million dollars. Testimony is now being taken in this city for use before the New York court, and Mr. Huerne feels confident of success. He alleges, in substance, that his shares were wrongfully transferred by his associates to other parties, so that he was unable to participate in the enormous profits afterward realized from contracts with the canal company, said to be at least \$70,000,000.

The new Japanese minister at Washington is a man with a history. His name is Mutsu Munemitsu, and he is said to be one of the greatest statesmen of Japan. He is noted as a financier and he was chief of the bureau which revised the tariff some years ago, putting it on the basis of European money. He has been governor of Yokohama and chairman of the Senate, which is a position much like that of the President *pro tem* of the United States Senate.

How to render the business portions of New York practically fire-proof is a subject which has been carefully considered by a well-known builder of this city, at the request of a number of fire insurance underwriters. The various trades having centralized permanently in different portions of the city, buildings hereafter constructed should have a more permanent character. At present, in the dry goods district, there are but two absolutely fire-proof structures, and either of them would form an effectual barrier against fire approaching in any direction. It is advised that the laws should be so amended as to require that in certain localities the basement and first floors should be literally fire-proof, as numerous fires originate in the basement or sub-cellar, and brick piers alone should be employed, or iron columns encased with brick, and large areas should be divided by brick partition walls. Instead of lath and plaster, walls should be faced with fire-proof furring. Every elevator should be inclosed in brick

walls from top to bottom, with fire-proof doors at every opening, and stairways should be similarly inclosed. The stairs themselves should be of iron and slate, or rather of fire-proof construction. The increased cost of the features thus recommended would be from 20 to 25 per cent., which would be warranted by the increased rental of the property.

While legislators at Albany are wrangling over the new arrangements at Quarantine, deadly diseases now epidemic at several foreign ports are becoming every day more threatening.

The *Northwestern Railroader* publishes a summary of prospective railroad construction in the Northwest in 1888. It gives an analysis of about 100 projected lines, aggregating over 10,000 miles. Of these it says 29 lines, aggregating 1400 miles, are fairly certain to be built this present year. Of the remainder, 50 lines, aggregating 5000 miles, will be built within the three or four following years. The largest builder among the Northwestern lines this year will again be the St. Paul, Minneapolis and Manitoba Railway, which, with its two subordinate companies, the Montana Central and Eastern Railway of Minnesota, will build, in 1888, 460 miles.

The Manistee Salt and Lumber Company, of Detroit, made an assignment to E. Golden Filer for the benefit of creditors. The liabilities are \$864,000. The assets are \$1,883,239, of which \$1,260,641 is real estate. The company are a very large concern, with a valuable plant consisting of pine lands, lumber, railroads, sawmills and salt blocks, with very complete paraphernalia.

The managers of the Canadian Pacific Railroad speak of the satisfactory train service in the mountains during the present winter. Beyond a few detentions in January from snowslides the train service was uninterrupted. The company have already hauled in grain and flour from Manitoba and Northwest territories about 8,000,000 bushels, leaving 6,000,000 or 7,000,000 yet remaining. *Per contra*, some of the grain shippers lately have complained of serious delays.

The proposed removal of the large hotel at Brighton Beach, by means of locomotives, will take place in about three weeks, and doubts are expressed respecting the result. The structure is irregular in shape, but is 460 feet in length and averages not less than 170 in depth. In order to preserve it from the encroaching sea it must be moved back 550 feet. The total weight is about 5000 tons. By means of powerful jacks this weight will be transferred to 15 iron freight cars, each of 60,000 pounds capacity, and the whole to be drawn by a procession of 10 locomotives running on two parallel tracks. To the rear locomotive in each procession of machines will be attached one heavy cable. To this, at a point not far from the locomotive, will converge the lesser cables to the 12 portions of the building which will be pulled by the procession. In this way the force exerted by each procession of locomotives will be nearly evenly distributed. The fact remains, however, that there will be two sets of locomotives, and that it may be difficult to make them exert force evenly upon the different portions of the building to which they are attached.

The trust investigations, under authority of Congress, commence to-day, the House Committee on Manufactures having completed the arrangements preliminary to a formal examination of witnesses.

The New York and New Jersey Bridge Company, who have a scheme to put a great railway bridge across the Hudson River from New York City at Washington Heights to the shore of New Jersey have amended the bill incorporating the company so as to provide that they may sell

the bridge to any railway corporation, or sell a portion of the stock to them. This modification of the bill, it is suspected, points to the construction of the bridge by some one of the great railway lines centering in Jersey City.

Reports from Ireland are to the effect that emigration the coming season will be on a large scale. The labor market in the United States is likely to receive important accessions from this source. Germans will be retained at home, if possible, for military service, pending the question of war.

The Julian electric cars have been running on several of the street railway lines in this city with apparent success. The car is of the ordinary pattern, with the batteries placed under the seats. These batteries are charged every third trip.

Captain Patterson, of the New York Navigation School, proposes to fit up a square-rigged vessel for the benefit of amateur yachtmen and cruise as far as Halifax. About 75 applications have already been received.

Statistics of the manufacturing industries of Kansas, gathered by the State Bureau of Labor, show that the capital invested is \$26,500,000; cost of material, \$35,000,000; value of product, \$50,000,000. If we add the \$2,500,000 invested in mines and \$6,000,000 in railroad shops and roundhouses, we find the capital invested in manufacturing industries of the State to be \$35,000,000, an increase over last year's estimate of \$5,765,250. Six thousand persons were employed in coal, lead and zinc mines.

The immense structure on the corner of Forty-second street and Lexington avenue, occupied by Potter & Stymus and other manufacturing firms, was entirely destroyed by fire on the 1st inst. The flames were first seen on the second floor, in a room not occupied, and extended to the roof with marvelous rapidity. The cornices of the hospital for the ruptured and crippled, across the street, caught fire, as did the turret of the Catholic church, a block distant, but both structures were saved. The Vanderbilt Hotel suffered to the extent of \$20,000. The staunch warehouse of the Manhattan Storage Company with its boiler-iron doors received the full force of the flames, and, though only separated by the width of Lexington avenue, undoubtedly prevented the spread of the fire in that direction. The articles incorporating the Potter & Stymus Mfg. Company were filed scarcely an hour before their building was in flames. Their loss is estimated at \$150,000. The basement of the building was occupied by the American Pneumatic Tool Company, whose loss will probably reach \$25,000. Engineer David Cochrane, who works for Potter & Stymus, prevented a big explosion of the three boilers which supply steam for the firm's 125 horse-power engine. He ran to the safety-valves and opened them as soon as he saw that the building was sure to be burned.

The Commissioner of Public Works, General Newton, contemplated resigning his office, in order to accept the position of Superintendent of the Coast Survey, but was induced by Mayor Hewitt to remain until the expiration of his term on the 1st of May, by which time it may be possible to find a successor who shall be fully qualified.

Claus Spreckles has arrived East from San Francisco and threatens to give the Sugar Trust no quarter. With his proposed big refinery he promises to sell as low as the most formidable competitor.

The great coal breaker of the Glendower colliery, operated by the Reading Company, was mysteriously burned on Sunday night. Loss above \$100,000.

## THE MILLS TARIFF BILL.

### Proposals Discussed.

The long expected tariff bill, as proposed by the majority of the Ways and Means Committee, has been placed before the country. While some of its provisions have been accurately foreshadowed by the press and by parties interested, others have taken the business world by surprise. While in the iron trade the consensus of opinion appears to indicate the probability that it has little chance of becoming a law, the proposal possesses a deep significance as furnishing an indication of the methods and the aims of what is, after all, a large, though not a commanding, number of legislators.

With the view of gathering in a comprehensive form the impressions which the measure has made upon the trade we present below a synopsis of the views expressed by a large number of the leading and most intelligent members of one of the greatest industries of the country, including, as it does, special reports, nearly all of them telegraphic, from the great centers of production and of distribution:

#### New York.

As a distributing point in the greater number of lines, rather than a manufacturing center in iron, steel and the base metals, a New York consensus of opinion reflects probably most accurately the views of those whose close business relations, and whose constant observation and intercourse allow them to gauge most accurately the capacity of foreign producers to undersell domestic manufacturers.

#### STEEL RAILS.

In pursuit of what appears to be a definite policy, those who claim the title of tariff reformers have persistently attacked the steel rail interest. The cut has been relatively greatest in this article, probably with the idea that a powerful interest in the railroad world could be brought to support the measure, and on the ground that it would be popular with granger communities. The reduction proposed to \$11 per ton in place of \$17, as it is now, is, with one or two exceptions, the heaviest, and affects by far the greatest single branch of iron and steel manufacture. Those who are responsible for the proposal put forward in the Mills bill, among whom Scott, of Erie, is prominent, claim that \$11 is ample protection consistent with a fairly ample profit on the capital invested. They put forward the argument that the mills can produce rails at \$26 at the Eastern works at a profit. While it is true that they have at one time sold at that figure, it does not by any means follow that it represents the cost, even at a time when raw materials were exceptionally depressed, freights were low and labor was at unduly low rates. It is claimed by good authority that only few of the Eastern mills can put rails on cars at present at less than \$30, and that with the greater part of the capacity that figure can only be attained by severe pressure on every department from the ore mine and colliery to the final haul to market. Some of the makers express themselves very emphatically on this point. We have endeavored to reach some conclusions as to the probable effect of the passage of the Mills bill upon the rail interest. Turning first to the Southern trade, we have the following data: Rails have sold in Great Britain over quite a long period at £3.15/, equivalent to \$18.19, f.o.b. English ports. They are now under £4. Freights to Southern cotton ports fluctuate within wide limits according to the season and special conditions. They have been as low as \$1 a ton, but we may place them at

\$2. Add for insurance, bankers' credits, importers' profits, inspection, &c., \$1, and \$11 for duty, as proposed, and we would reach a total of \$32.15. This agrees closely with the figures at which rails were offered last year, when they were quoted at £4 at English ports and down to \$39.25 at New Orleans (with \$17 duty). These figures prove that the cost of laying down is very near the actual rates at which business can be done. Starting liberally with \$32.50 as the cost of the foreign rails laid down—say at New Orleans—the net price for American rails at mill may be readily ascertained when we state that the freight, all rail, has been made at \$4.75 from mill in Eastern Pennsylvania and that the combined rail rate to tidewater and by rail or steamer to the Gulf is nearly the same, though it has fallen at times to \$4 on an average. This would leave \$27.75 to \$28.50 at Eastern mill, a figure which would cut off a great deal of the Southern business. In order to ascertain the magnitude of the latter we have been favored with an estimate made on the basis of last year's shipments of the rail mills, enumerating every Southern road within reach of foreign competitors. The aggregate South and Southwest was close upon 200,000 tons, not counting imports of foreign rails and not taking into consideration at all the Pacific Coast or the Northwest. It is within the bounds to state that the possible imports would not be less than 300,000 tons in active years. It might be urged that last year was exceptional, so far as the demand from that quarter is concerned. Such is not the case, since up to date we know of sales to that territory aggregating over 75,000 tons, with Texas and the Southwestern railroads still to hear from as purchasers. It may be insisted that at least two American mills have, against cheap ocean freights on foreign rails, the compensation of low water rates on the Ohio and Mississippi. So far as the former is concerned, it is unfortunately extremely uncertain. From June to October last year one mill piled up rails waiting for navigation until 27,000 tons had accumulated. But not alone the Southern and the Pacific Coast trade—even that of the Northwest may be threatened. With \$11 duty, English rails can be put into Duluth at \$36 under favorable circumstances: We are within the mark, therefore, when we assert that the reduction of the duty to \$11 would certainly lead to an increase in the revenue of at least \$2,000,000 annually, with the probability that in years of great activity here and dull business abroad the amount would be easily doubled. It may be granted that the first effect of a lowering of the duty, especially if accompanied by orders to foreign makers, would be to cause an advance in prices on the other side, but with a new important market assured them English manufacturers would soon expand their capacity, capture and hold a very important share of the business.

#### PIG IRON.

In the pig-iron trade little importance is attached by leading producers to the proposed reduction from \$6.72 to \$6 per gross ton. The largest maker of foundry irons in the East expressed the opinion that it would have but little effect. Temporarily, the speculative element in pig iron in Great Britain might make the reduction a pretext for a bull movement, and there are indications that the mere prospect of lower duties is producing that effect there. The immediate result of the passage of such a bill would be to cause an advance both in prices and in freights which would swallow the difference, and leave the market here practically in the same condition. But in the long run, considering the fact that any possible increase in the orders from this side would only be a drop in the bucket so far as the

make of Europe is concerned, foreign markets would relapse to their normal condition, and prices of foreign pig would be lowered to the extent of the lowering in the duty minus the increase in freights caused by larger importations. So far as Scotch pig is concerned, only a certain quantity is used in any case, and the demand would not be notably stimulated, because the quantity of cheap freight room available is now nearly taken up on the Glasgow steamers, both to New York and Boston. Any excess of freight over that fluctuating quantity if offered could only be placed at figures tempting to the steamers as paying freight. There might, however, be a possibility of larger importations of hematite pig for foundry purposes, a business which to some extent is being done to-day. Taking selected No. 1 hematite at 45/, f.o.b. English ports, adding 5/ for freight, 1/ for insurance and bankers' credit, we would have 49/. Adding duty and importers' profit, we would reach a total of about \$18.75 at a \$6 rate of duty, importing in cargo lots, a business which so far as foundries are concerned would be limited; because, if the iron must be stored to be distributed in smaller lots, \$1 per ton would be added, making No. 1 foundry \$19.75, against \$20.50 at present rates of duty. At 43/ for the average of the three grades of hematite, for Bessemer purposes, and importation in cargo lots to single purchasers, business can now be done at about \$19.25, with a possibility of \$19. At the proposed rate of duty this would come down to \$18.25. In times of great activity a rise in freights might at least partially counterbalance the effect of a lower duty.

In the long run, according to opinion of the trade at New York, the proposed lower duty would have comparatively little effect upon the imports or the prices, chiefly because the greater part of the difference would probably be largely absorbed by higher freights. Looking to the immediate future only, many pig-iron manufacturers hold the opinion that the balance of the difference would disappear in higher prices abroad. This, however, could not probably be maintained for any length of time. Spiegeleisen and ferromanganese are not expected to be influenced materially by the change proposed.

#### RAILWAY FASTENINGS.

In spikes and railway fastenings prominent manufacturers expect no change whatever. Even for all the purchases of foreign rails made during the past year the fastenings were bought in this country. Even for foreign orders our mills have competed. In the case of the 10,000-ton Huntington rail order for Mexico, brought in in bond into New Orleans, bids were made by American mills, and the business went to foreign makers only because they bid a shade under \$2.60 for the spikes, at which at that time American mills offered to deliver at New Orleans. American spike machinery is so much superior to that of foreign makers that even with their cheaper raw material they have been unable to compete.

#### BEAMS.

In beams the proposed change in the duty would be a serious matter. At present Belgian beams can be laid down in New York at 2.75 cents per pound, but the sections are so heavy, and the quality is, generally speaking, so poor as compared with the American product, that little or nothing has been done in them, and it would be a source of danger to the community should their importation be encouraged and their use become widespread, especially among builders accustomed to the American standard. German beams, rolled to American sections, chiefly in 12-inch and 15-inch, compare far more favorably with the domestic product, and



would become a dangerous rival, especially on large time contracts. They have been offered for some time past, at present rates of duty, at 2.9 cents, and are being imported to a moderate extent. Eastern manufacturers state that so large a reduction as that proposed would lead to a heavy loss of business, especially in the leading tidewater markets.

#### STEEL INGOTS, BLOOMS, BILLETS AND SLABS.

In the opinion of importers one of the most curious features of the proposed bill is the manner in which steel in ingots, blooms, billets and slabs has been provided for. They all until now have come in under the general 45 per cent. ad valorem rate. Now billets and slabs are classed with steel rails under a \$11 specific duty, which is an increase. Billets are now, at a time when the foreign works ask considerably more than they have done, selling abroad at 67/ to 69/ at German mill. It is asserted that somewhere between 65/ and 70/, at normal prices for pig, the foreign works can live and make a moderate profit. Now, at 70/ dutiable value, the 45 per cent. rate was equivalent to \$7.68. Ingots and blooms are changed from 45 per cent. to 0.4 cent per pound. At the old 45 per cent. rate, the duty on a value at works of 67/ for blooms would be \$7.41, as against \$8.96 per gross ton, as proposed. The evident intention of the framers of the bill has been to equalize the past discrepancy in the duty on rails and on steel in other forms, an undertaking which has led to the anomalous and incomplete form in which it is now framed. As it stands, it will inevitably lead to endless confusion, since it is practically impossible to define the line of demarkation between a bloom, a billet and a bar. Roughly it may be stated that usually the smallest size termed a bloom is 4 x 4 inches, while billets go down to a little over 1 inch square. It is certain that importers would make an effort to call all larger billets blooms, and all smaller sizes bars. Steel-makers urge that in this manner the entire steel manufacturers of the United States are not alone made to suffer with the rail-makers, but the soft steel mills who produce, generally speaking, a better grade of material, are placed in a relatively more disadvantageous position. Even if it were granted that \$11 on rails was a fair duty, makers insist that for other forms, not excluding blooms and certainly not bars, at least the same rate be fixed.

#### STEEL SHEETS AND PLATES.

One of the striking anomalies of the present tariff and which has been allowed to remain unaltered is the duty on steel sheets and plates as compared with iron. At the time of the passage of the present act the possibilities of future development in the manufacture of steel sheets and plates on both sides of the Atlantic were unforeseen. Not being specifically provided for, they have come in under the 45 per cent. rate. The following figures, copied from a circular recently sent out by a commission house in Liverpool, will seem to illustrate how this has enabled foreign producers to offer this class of material at prices considerably below American manufacturers' quotations:

#### Cost of Importation of Steel Sheet, Bridge and Tank Plates.

46, 5/, less 2 1/4 per cent.....	\$29.56
Insurance.....	.15
Duty, 45 per cent.....	13.14
Freight, 10/; primage, 10 per cent.....	2.67

Cost per gross ton.....	\$45.52
Cost per pound.....	2.04¢

In the same way the cost of sheets to 18 wire gauge, on the basis of £6. 15/, is under 2.19¢; flange plates the same; fire-box, on the basis of £7. 12/6, 2.46¢; extra fire-box, at £8. 12/6, 2.77¢, the same figures being quoted for New Orleans deliv-

ery, and 16¢ per 100 pounds more for San Francisco delivery. The same circular, under the present tariff, makes the cost of sheet iron up to 20 wire gauge, on the basis of £6. 5/, as high as 2.55¢, since the duty is 1.1¢ per pound. If there were no discrimination against steel sheets they would cost to import 2.65¢. Under the proposed tariff law the reduction is 1/10¢ per pound, which, assuming that the entire reduction were surrendered by foreign sellers, would put iron sheets at 2.45¢, while steel would remain at 2.19¢. Consistency would demand that both be placed on the same footing at least, and there should be no discrimination against plates and sheets made of Bessemer, basic or open-hearth steel. Galvanized common sheets can be laid down at 3.70¢.

#### BAR IRON.

The cost of importation of English bars is very close to the figures now ruling in tidewater markets. Should the proposed reduction of 0.1¢ per pound be carried through, Common bars, at £4. 7/6, at the present rate of duty can be laid down on dock at 1.85¢, while American is selling at 1.75¢ base on dock, while a better grade Crown bars at £5 can be laid down at 1.98¢, while American refined is selling at 1.9¢.

#### LEAD.

The heavy reduction proposed in lead and lead ore has been a sharp surprise to the mining interest and has caused great alarm, particularly among those engaged in the industry in Missouri and Kansas. The tariff on lead has been largely circumvented of late by the importation of so-called silver ores from Mexico, about 15,000 tons of metallic lead having been brought in during 1887. Lead is produced almost exclusively west of the Mississippi, and the producers may be divided into two groups, those of Missouri, Kansas and Wisconsin, turning out about 25,000 tons, and those of the Rocky Mountain States and Territories, producing about 115,000 to 120,000 tons. The former produce exclusively non-argenteiferous pig, over one-half of it being from rock carrying about 6 per cent. of metal. The cost ranges between 3 cents and 3.25 cents at St. Louis, equal to 3.25 cents to 3.50 cents at New York, and as production in the section in question has remained practically stationary for a series of years, developing only lately, while that of the Rocky Mountains has increased, the cost of the latter is probably not far from the same figure. Since the mining there is coupled with the production of the precious metals the proportion of cost borne by the baser metal cannot be segregated. Both consumption and production have fluctuated within such wide limits that prices have at one time gone as low as 2 1/4 cents in New York. An average must be taken over a long series of years. The leading authority states that over a series of years the price in the United States has averaged about 1/4 cent above the parity of the foreign metal. The reduction proposed, since it is equivalent to that amount, would practically cause the abandonment to foreign producers of the Atlantic coast market. It would probably lead to the partial displacement of mining operations in this country by greater output elsewhere, accompanied by a considerable increase in the revenue.

#### COPPER.

Producers of ingot copper, among them one of the largest in the country, view a proposed reduction in the duty of that metal with indifference as far as the present and the near future is concerned. As large exporters we have kept close to the parity of the world's markets, or below it. When the present duty was put on copper it was largely the outcome of proofs at that time submitted by producers that the higher cost of supplies alone in this country as compared with mining companies in

other parts of the world footed up to 3 to 3 1/2 cents per pound of ingot. Since then the growth of American industries and the cheapening of supplies resulting therefrom have reduced that figure considerably. The only possible remote cause for uneasiness is that in the future contingencies may arise which may force the producers of the metal into the attitude of demanding an equalization in self protection. A leading Lake Superior producer pointed out the fact that on the lake the copper miners must compete with the iron ore miners in the labor market, and that thus a partial removal of the tariff on one commodity, while it remains on another, may cause serious suffering.

#### TIN PLATES.

The New York tin plate trade, taken as a whole, are indifferent to the new tariff bill, so far it concerns their particular business. From the opinions we have gathered from the principal import houses this indifference is due to several causes. In the first place, a number state freely that they do not think the bill will, by any possibility, become a law. Some, as individual protectionists, oppose it, and others, as individual free traders, wish it well, while a third division, whom we may speak of as revenue reformers, say that it is ill-devised, and that, though a reduction of duties is demanded, no measure should pass which keeps a tax on the raw material, iron ore, for instance, and takes it off the finished product, tin plates. One point that the trade are agreed on is that proposed tariff changes seriously unsettle business, and already large buyers in this country are holding back orders in the hope of cheaper plates following a reduction of duty. Assuming that the bill becomes law, its immediate consequences are variously estimated, though the trade appears to be of one mind in thinking that the final effect will be to leave the business in practically the same condition as it is at present. A first result, of course, will be to augment the working capital of all the importing houses by some 25 per cent., that being about the proportion of the capital tied up in the payment of duties. This release of funds will permit merchants to enlarge their trade, which the majority think will have to follow if total profits are to be kept from decreasing. This increase of working capital is a benefit, but offsetting it are several possible disadvantages. One is that, with the abolition of duties, houses of smaller means would start in the tin-plate importing business and thus increase competition; furthermore, it is pointed out that with free plates manufacturers would be likely to establish agencies here which they have not at present owing to the money required for, and the trouble involved in, passing goods through the Custom House. In its effect on prices opinions do not concur. Some consider that the removal of the duty will be only of partial advantage to the American consumer, because the manufacturers will advance prices 50 per cent. or more of the difference. On the other hand, it is urged that the makers are such an utterly discordant set that they will quickly let prices drop the whole difference of the duty, which is \$1 a box or more. On the assumption that the price of plates would fall, it is pointed out that profits must decline, it being an admitted principle in business that with the reduction in price of a commodity profits are necessarily curtailed. One proposition brought forward, which, however, met with but very little support, was that with the extinction of duties tin plates would become a speculative article in the market, such as pig tin is at present. The arguments against this were all to one effect, namely, that tin plates are a perishable article, so to speak; that is, they cannot be stored for any length of time without deteriorating and

declining in value, and that therefore they could not be held long enough to make them suitable for speculative purposes.

We print elsewhere an interesting series of letters from American sheet-iron manufacturers on the effect of the proposal to put tin plates on the free list upon their business.

#### Philadelphia.

The sentiments of a number of leading Philadelphia iron manufacturers are expressed in the following interviews:

Samuel M. Felton, president of the Pennsylvania Steel Company: "The duty on steel rails is now \$17. I think \$11 is too low. It seems to me that it ought not to be reduced at all. Perhaps a reduction of \$2 or \$3 would not materially injure the business. The duty on slabs and billets is too low now. We cannot make any money on them now. There is no money in the miscellaneous articles, and I fail to see why the tariff should be reduced. I am opposed to the bill in every shape. I am opposed to any tinkering with the tariff, because I think that it will injure the country. It is entirely in the interests of the free traders—a move in the direction of free trade. Iron and steel cotton ties are introduced by this tariff free, while iron hoops and steel hoops are still dutiable. Why this discrimination in favor of cotton ties? It is in the interest of the South entirely, because cotton ties are used only in the South. Iron and steel hoops are used all over the country, particularly in the East, West and Northwest. The tax on finished articles, such as steel rails and miscellaneous articles of steel, is reduced by this bill; whereas the duty on raw material, such as iron ore, is not reduced, but was increased in 1883 from 20 per cent. ad valorem to 75 cents per ton. This was certainly unjust, the duty on the finished articles being reduced. The duty on the raw materials entering into the composition of these articles should be correspondingly reduced when the reduction is made on the finished articles."

An officer of the Cambria Iron Company: "We are in a different position from the Pennsylvania Steel Company, and we don't acknowledge that there is such a thing as raw material in our business. Our mines are in Michigan, and theirs are in Cuba. Our men up there are Americans, and the ore can't be produced without their labor, and therefore the advance that was made on ore some time ago was perfectly right, being a protection to the American laborers who mine the ore. Otherwise their labor would have to be reduced to the same basis as labor producing foreign ore. Regarding steel rails, the Democratic party say their only object in a tariff bill is to reduce the surplus, whereas if they reduced the duty as proposed in the bill, it would probably increase the importations so enormously that the income of the Government from the lower duty would be greater than it is from the present duty. We believe that the selling price of rails is below cost today, and we know that we lost money largely when we sold rails two or three years ago at \$27. Since that time we have made two advances in wages and only one reduction, which went into effect the first of last month. The reduction of duty as proposed in the Mills bill will prevent our selling any rails at distant points in the Gulf, Southern Atlantic or Pacific Coasts, as foreign rails can be landed there by paying a minimum ocean freight. Therefore the American railroads will lose the carrying of the rails that were formerly forwarded from American mills to these points. The higher duty was therefore a protection to American railroads as well as to American mills. The lowering of the duty as proposed in the Mills bill will prevent any possible development of the steel-making industry

in the South, for the reason above given—that is, that foreign rails can be landed so cheaply at Southern points. The only ones interested in the lower rate of duty on steel rails are foreign manufacturers, foreign vessel owners, and importers (who are generally foreigners, or if not foreigners by birth, foreigners as far as all their financial interests are concerned). With the exception of a few railroad officers whose interests connect them with the above class, railroad men generally prefer rails to be higher than lower, as it means more prosperity to the country at large, more business for their roads, and higher freights."

Mr. Wm. E. S. Baker says: "I am fully convinced that the agitation of the tariff in Congress has increased what the message began three months earlier, and the result is the demoralization, if not prostration, of several branches of the iron business. All well-informed people must know that pig iron, which is the base, has yielded little or no profit for nearly two years, it being so low that a slight advance would invite imports. If the duty is reduced, the furnaces must either stop or reduce cost, and as 75% of the cost is labor, in one shape or another, it is evident that a reduced duty means lower wages, and it is so understood by the working people."

Mr. White, of the Phoenix Iron Company, says that the passing of the tariff bill in its present shape means the virtual extinguishment of many of the most important iron and steel industries in the United States. Labor would not only be placed on the same scale as in Europe, but the vast sums of money recently put into steel plants would be wiped out. A reduction in the price of labor to a European basis would not be sufficient, as the machinery and plants have been far more costly than those in other countries, so that it would be impossible to continue business under such conditions as contemplated by the Mills tariff bill.

Andrew Wheeler, of Morris, Wheeler & Co.: "The metal schedule of the Mills bill would prove very damaging to American interests. Importations would increase under it and the whole iron and steel industry of the country is suffering now from the excessive importations of last year. Over \$50,000,000 were sent abroad last year for iron and steel, all of which except the Spanish and Cuban ores might have been produced here and given employment to a vast number of our own population. The bill as it relates to metals is so injurious to our national interests that it hardly seems possible that an American House or an American Senate can be induced to pass it in its present shape."

#### Pittsburgh.

A number of Pittsburgh iron manufacturers who were interviewed as to the probable effect upon the industries of that city and vicinity, should the proposed bill become a law, have expressed themselves substantially as follows: Hon. B. F. Jones, of Jones & Laughlins, Limited, one of the best posted men on the iron industries in this country, said: "It is one of the most preposterous bills ever drawn up. Anything that takes away the work that belongs to an American workingman and puts it into the hands of a foreigner is a national outrage. It is possible that there are some places in the country where \$6 of a reduction on steel rails would not make any difference, as it would be overcome by freight, but it will make a serious difference on the Pacific and Gulf Coasts." General C. L. Fitzhugh, of Schoenberger & Co., said: "It is utterly outrageous, and, if passed, will close manufactories in this vicinity. A reduction in wages would not overcome the proposed reduction. If a proper tariff was placed on tin plate it would result in the erection of fully 50

large rolling mills in this country to accommodate trade in this line. At present, however, it is on the free list, and no tin plates are made here. I do not believe such a bill will ever be passed."

A. M. Byers, of A. M. Byers & Co., one of the largest pipe manufacturers in the country, said: "If the bill as reported by the committee passes it will kill the iron and steel interests of Pittsburgh and practically destroy the cotton tie industry in the United States. The manufacture of this class of steel goods in the South is an infant industry, and it will undoubtedly nip it in the bud. Yet it will please the cotton planter, for he is the man who buys and uses it."

A. E. N. Painter, of J. Painter & Sons, the largest cotton tie manufacturers, said: "If the bill becomes a law it will wipe out the business of making cotton ties in Pittsburgh, as well as elsewhere in this country. The manufacturer alone will not suffer. The wages question is closely connected with the tariff question, as a high tariff means high wages and a low tariff means low wages; and since the laboring class are the men to whom the wages are paid, they must be the loser as well as the manufacturer. The South is placated partially by the placing of cotton on the free list, while the duty remains on ore, since considerable ore is now produced in the Southern States."

In conclusion Mr. Painter stated that the passage of the Mills bill would have about the same effect on the cotton tie industry as the decision of Judge French, Assistant Secretary of the Treasury, when he decided that cotton ties should be admitted free. This decision had the effect of closing down the mills in Pittsburgh engaged in making cotton ties till it was reconsidered.

A. F. Keating, of Zug & Co., said: "I do not think there is any possibility of the bill passing. If it would it would paralyze Pittsburgh industries, as well as others throughout the country. There certainly can be no danger."

W. H. Singer, of Singer, Nimick & Co., Limited, steel manufacturers, said: "I don't feel very badly over the present outlook because I am confident the bill will not pass, and, therefore I do not take much interest in it. If I had any idea that it would pass I should be very much alarmed. But judging from its reported shape it is merely a target for political speeches, and I think that after a large amount of oratorical effects the tariff will remain as it is."

Alan W. Wood, of W. D. Wood & Co., Limited, the well-known manufacturers of patent planished sheet iron, said: "The reduction on sheet iron of 50 per cent. will seriously affect us, and if the bill is passed we may as well get out of the business at once. The section on iron or steel plates, or sheets or plates, or taggers iron, coated with tin or lead, &c., will, I believe, seriously affect the manufacturers of galvanized iron, as tin enters into the composition of coating; and it will, under the part of which 'tin or lead forms a component part' be affected. Under the section of sheet iron, thin, 1 cent per pound, foreign manufacturers will be enabled to bring in sheet steel at this rate, and this will be invidious to the manufacturers of sheet steel. Some parts of the bill are all right and the reductions are not so great, but I am a thorough protectionist, and on that ground decidedly object to any reduction whatever."

A number of other manufacturers who were seen stated that they had not read the bill thoroughly, and for that reason were not in a position to express their views. All united, however, in saying that any attempts made by Congress looking



to a reduction of the present tariff would be ruinous to both manufacturer and workman, and should not be tolerated. The opinion is alike unanimous among our manufacturers that the bill will not be passed.

Chicago.

Our Chicago correspondent telegraphs as follows: "Manufacturers are earnestly opposed to the bill, characterizing it as very crude, and in many respects utterly absurd. Merchants do not warmly support it, although some of its proposed changes are in harmony with their views—notably, the abolition of the duty on tin plate and the reduction of the rate on sheet zinc, but they recognize the danger to such an important interest as the manufacture of cutlery if the duty on competing goods were to be scaled down from 50 to 35 per cent. The sympathies of the merchants here are with American manufacturers. Both merchants and manufacturers, however, feel rather indifferent toward the bill, as they think it will have no chance to pass Congress and is not worth much consideration on the part of business men."

Chattanooga.

From Chattanooga we receive the following dispatch: "The proposed tariff bill is not looked upon with any degree of favor through this section of the South. Party lines are not divided upon this question. The present condition of the South, just merging, as it were, into large manufacturing interests of every kind and description, justifies the opinion that its passage would be a blow at both our labor and industries and materially operate as a check to the onward march to wealth and position that the South has in prospect. It is looked upon as a measure that will increase rather than diminish the revenue by largely increasing importations. It will cause the immediate suspension of hundreds of manufacturing enterprises all through the South that are just beginning operations and that are in a measure as yet in an experimental condition, while many industries that have been running only upon a small margin of profits will either have to close down or call for large reduction from their laborers and mechanics. Very many leading Democrats look upon it as hostile to the success of their party at the coming fall election, and that the passage, so far as the South is concerned, of the bill will drive some of the life-long Democrats into the Republican party when national matters are concerned. The Southern people are united to a man in continuing the onward and upward progress to development and wealth upon which she has just entered."

Birmingham.

Birmingham contributes the following: "Being little disposed to concede that a good thing can come out of Nazareth, manufacturers of this district do not speak enthusiastically of the tariff bill of Chairman Mills and his Democratic confederates of the Ways and Means Committee. The 72 cents reduction of duty on pig, with no offset on ore, is a rather agreeable surprise, but the tendency of the measure is too 'horizontal' to please any such protective tariff community as this. Even in iron lines, too, there is some dissatisfaction at the concessions on higher grades of manufacture. The way the knife has been applied to the wool and sugar industries, however, seems to operate more than anything else against the popularity of the bill, and the non-committal attitude of the committee as to tobacco and whisky does not help matters. 'We must stand by wool and sugar growers if we expect them to see us safely through the next tariff reform tempest' is the sentiment of manufacturing interests at large. Still, if these commodities were given a fair degree of protection, there would hardly be any violent opposition to the bill in this quarter."

Cincinnati.

Our Cincinnati correspondent telegraphs to us as follows: "Respecting the effect of the proposed tariff bill great unanimity of opinion on the essential features is held by the local trade. On minor points there is some difference in the views entertained. Much confidence is expressed in the future, should the bill become a law, regarding the reduction proposed on pig iron. In the manufactured iron trade it is believed that the moral influences of any bill will be good, since it would allay agitation which in itself has been the source of much evil. The bill affects industries much less than has been anticipated. It is pointed out that any reduction proposed in itself is a mistake so far as the ostensible aim of the majority of the committee is concerned, since it will increase the importations and thus rather swell than reduce the revenue which it is sought to diminish. Producers of domestic manufactures will suffer and the effect will be to lead eventually to the blowing out of many furnaces and to the closing of many mills not favorably located. A reduction in steel rails is especially opposed, it being predicted that in the present depressed condition of the trade, should the bill become a law, half of the producers in the country would be prostrated. A few dissent from these views, believing the reduction in pig and manufactured iron too small to materially affect the relative condition of domestic trade and importations. Even consumers whom the bill would apparently assist, committed to protectionist principles, believe in a sympathetic reaction, and hold that should wages be reduced as the outcome of the measure proposed, a greater depression would follow."

WASHINGTON NEWS.

(From Our Regular Correspondent.)

WASHINGTON, D. C., March 6, 1888.

The long-expected revenue reduction bill promised by Chairman Mills of the Committee on Ways and Means has at last put in an appearance. Its consideration was commenced in general committee today. The chairman has notified the Republican members that they can have full time for the presentation of their views upon the different provisions of the bill. They, however, are not disposed to waste much energy in mere perfunctory opposition. As the bill was prepared by the Democrats of the committee and submitted all cut and dried no action of the minority would make the slightest difference in the result.

Chairman Mills claims that ten Republicans will vote for his bill, and upon that predicates an opinion that it will pass. The Republican leaders like Reed do not admit any defection in their ranks. The protection Democrats are also holding their forces intact. It is possible that a bill will pass, but it will not be the committee bill in its present shape. The committee have also completed an internal revenue tax repeal measure, which takes off \$25,000,000 revenue on manufactured tobacco and fruit brandy.

The reductions to be reached under the Mills bill have not been fully computed. The tables are now being prepared. The approximate amounts are:

Free list.....	\$22,000,000
Woolens.....	17,000,000
China and glassware.....	1,500,000
Chemical schedule.....	1,000,000
Cotton.....	500,000
Flax.....	1,000,000
Sugar.....	10,000,000
Metals.....	3,000,000
Speculative reduction of tariff duties.....	\$50,000,000
Proposed internal tax repeal.....	25,000,000
Total.....	\$81,000,000

Mr. Randall expects to introduce this bill in the House for reference on Wednesday. His chief reduction is internal revenue repeal, as follows:

Repeal of all tobacco taxes.....	\$30,000,000
Reduction of the tax on whisky to 50 cents a gallon, total.....	28,000,000
Repeal of licenses.....	5,000,000
Repeal of tax on spirits distilled from fruits.....	1,500,000
Total.....	\$64,500,000
Admission free of all alcohol used in the arts.....	5,500,000
Total.....	\$70,000,000

The bill will take up each schedule and make revisions in conformity with the views of capital and labor interested. Tin plate, free in the Mills bill, and 1½ cents a pound in present statutes, is raised to 2½ cents a pound. The practical effect of this, it is claimed by Mr. Randall, will be a reduction, as this branch of industry will be revived at home, thus cutting off the present enormous importations and proportionately lessening the revenue from that source. Pig iron is retained at its present rate, \$6.72 a ton. It is \$6 in the Mills bill. The duty on steel rails, now \$17, and in the Mills bill \$11, is placed at \$15 a ton, or possibly \$13. Coal and iron remain as they are. The rate on wool is arranged to suit the views of the wool-growers. The free list includes such articles as will not injuriously affect American labor. The exact amount of reduction under the tariff schedules has not yet been ascertained, but will be somewhere in the neighborhood of \$15,000,000. It will be some days before the question will be fairly launched in the House.

Mr. O. B. Thomas's bill in relation to trusts declares it unlawful for any trust to ship or transport from one State to another, or to any foreign country, or from such foreign country to a State in the United States, any article of merchandise, purchased, controlled or acquired, held or used, with the intent to unduly enhance the price of such article in the market or to the consumer. Violation of the law is made punishable by imprisonment for not less than two years nor more than five years. In the House, Mr. Breckinridge, of Kentucky, introduced a bill to declare "trusts" unlawful, and to admit certain imports duty free. It provides that whenever any article or product, when mined, made or manufactured in any foreign country and imported into the United States, is subject to a duty, it shall be unlawful for any persons, corporations or associations engaged in the mining, making or manufacturing of such article or product in the United States to enter into a contract, agreement, pool, combination, trust, association or understanding to control the quantity, number or value of products produced or the division of the profits, and those who, by the terms of such agreement, refrain from the sale of such article or product shall be prosecuted by indictment in any court of the United States, and may be punished by a fine not exceeding \$10,000 or imprisonment not exceeding one year, or both. It is also provided that when such trusts, combinations, &c., are entered into on articles subject to import duty, such articles shall be admitted into the United States during the continuance of the trust free of duty, provided that the trust controls 65 per cent. of such article imported into the United States, or 65 per cent. of the aggregate amount imported or produced in the United States.

It is announced that the Alabama Rolling Mill Company, at Birmingham, Alabama, are going to issue \$50,000 bonds to put in special machinery to manufacture cotton-ties, light hoops, bands, &c. The plant will probably be enlarged during the coming summer by the addition of a plate and sheet mill.

# The Iron Age

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We devote considerable space in this week's issue of *The Iron Age* to a discussion of the proposed tariff bill of the majority of the House Ways and Means Committee, quite generally known as the Mills bill. The overwhelming majority of those engaged not alone in the manufacture of iron and steel and allied industries, but also some of the largest importers, concur in expressing the belief that the bill has no chance of passing in its present form. Nor is it believed that a measure modified so as to meet with the approval of the majority of the members of the House could be carried through the Senate. The proposed bill bears throughout the evidences of an earnest desire to capture votes or to avoid active opposition from the members of one party. The placing of cotton-ties on the free list is a plain bid for Southern support, and the proposal to allow tin plates to come in duty free is a move in the direction of capturing aid in other directions. The many flagrant inequalities and inconsistencies in the present tariff are allowed to stand without an attempt toward their removal, and no effort whatever is made to remove sources of controversy and ambiguities which have developed in the present tariff, although they have been the subject of elaborate argument before the Treasury Department and the source of considerable litigation. We cannot trace a single instance where points decided justly or unjustly by the Treasury officials have been embodied in the bill. A single attempt has been made to equalize duties, and that has been in the rates on steel billets, blooms and slabs, an effort over which there has been very serious bungling. As usual, the sharpest attack has been made on steel rails, and it appears from those interested in this important branch that the imports probable under the duty proposed would be large enough to yield a revenue which would largely compensate for the lessened income through the abolition of the duty on tin plates and on cotton ties. So far as the immediate effect upon the trade is concerned, the prevalent feeling that the measure proposed has no chance of success in its present form narrows down its influence to the disturbance which tariff tinkering always has. However inconsistent or illogical a measure may be, however disastrously it may affect great industries, there is always a danger of dickering, in which the last thing considered is the injury done to business. An overwhelming majority of the citizens of the United States undoubtedly believe in utilizing our own resources to manufacture for our own consumption all the goods we need, with fair wages to the labor employed and an adequate compensation to the capital invested. Under the guise of an anxious desire to reduce the burdens

of taxation, those who claim to be tariff reformers single out individual industries. No better illustration of this policy could be offered than the crude Mills bill now before the country.

The influences affecting the Western demand for steel rails now seem to be all adverse. The great freight war continues without much prospect of an early settlement; the Iowa Legislature manifests a disposition to punish the railroads of that State severely for discriminating against the interests of its citizens; the locomotive engineers and firemen of the Chicago, Burlington and Quincy Railroad have struck, and not only seriously deranged the business of that line, but also caused an uneasy feeling in other quarters, while the tariff agitation in Congress contributes its quota to the general effect of disturbing elements. The outlook for steel rails is quite gloomy, as the railroads are not only postponing extensions which seemed probable a short time since, but they are also deferring the purchasing of rails for renewals until later in the year, after the skies shall have cleared.

It is quite generally believed in the trade that the published report of the Mills tariff bill, which we print elsewhere, is an incomplete abstract of the measure. This grows out of the fact that a good many important articles are not mentioned at all. We have an official copy of the document in question, and may state that the report printed is an exact copy thereof, so far as it relates to iron, steel, hardware and the metals. In the case of all articles not enumerated no change is proposed. In one item, viz., "nickel in ore, matte, or other crude form not ready for consumption in the arts," the original document duplicates it, placing it both on the free list and dutiable at 10 cents per pound of nickel contents. This error has been corrected by striking the item out of the free list.

## The Standard Oil Case.

The decision of the Interstate Commerce Commission in the cases of George Rice against various Southern railroads is such as might have been expected. While brought against the Louisville and Nashville Railroad, the suit, in popular talk, was against the Standard Oil Trust, or, rather, against the discriminations by which that trust had been built up. If any one had doubts about the need of the different provisions of this law regulating transportation, such doubts will be dispelled upon reading the printed testimony. Without charging against the railroad managers any intention to do a wrong to any shipper, we cannot fail to be impressed with the danger of allowing only one, out of several parties in interest, to decide absolutely upon freight charges. This is practically the case where there is no appeal from the dictum of a general freight agent. Such a principle as the compulsory publication of rates and conditions receives clear indorsement.

The Standard Company transported oil in tanks. Geo. Rice found that he could not compete with tank oil by shipping oil in barrels, and among other things determined to use tanks also. But all his efforts failed to get accurate information

upon the rates of oil in tanks and the conditions under which such carriage would be furnished by the railroads. Four or five roads made direct misstatements, stating that the rate upon oil in tanks was per 100 pounds, when, in fact, it was a rate per car without respect to capacity. The "coincidence" of these several errors by the various roads is remarked upon by the commission. Next it appears that the platforms of the cars were owned and furnished by the railroads, the iron tank being the property of the oil company; but nothing of this is told by the managers to Mr. Rice. Thus, although that gentleman felt obliged for his own protection at one time to try the tank mode of carriage, he was baffled at every step by the unwillingness of the railroads to give him precise terms, to which he was most certainly entitled. Nor could he obtain this information from any published tariff nor from any rate sheets which the law required should be posted. Nor did these tariffs or sheets contain any hint that the rates on tank cars were not based on actual weight. As if to make the attitude of the railroads as hostile to fairness and to public sentiment as pronounced as possible their attorneys devoted considerable time and argument toward attempting to show that it was none of Mr. Rice's business what rates were made on tank oil, and it was seriously claimed that it was none of the commission's business either, since the two kinds of cars were different, just as if the rates on pig iron should not be the same whether carried on platform or box cars. It was a fair matter for argument whether the advantages claimed for the tank—the return load of cotton-seed oil, for example—did not entitle the roads to charge a lower rate than on oil in barrels, but it will be noticed that this consideration came up rather as an afterthought; the *gravamen* of the complaint was that no attempt was made to put the discrimination upon any ground but that the railroad managers wished it so.

It would be amusing, if it were not serious, to print the correspondence in this case. One freight agent referred Mr. Rice to another, and he to a third, while at last no information was obtained from any of them. Some at different times quoted him higher rates than the regular ones—by mistake, as they explained upon the stand. We are glad to believe that the state of facts here brought out are exceptional, and that most of our railways are managed with a determination to be fair, but the necessity of some national regulation of railways is none the less clearly shown. A point of interest beyond the present case was made in the argument of one of Rice's counsel, Mr. Gowen. He said: "In any manufactured article not protected by patent right, and the basis of which is one of the great natural products of the country, there can be no successful trust or monopoly without the protection of unjust discrimination by railroads. You have a sugar trust to-day organized over the country. That sugar trust cannot be formidable unless the railroad companies give it a preferential rate over individual refiners. Because the moment it advances the price of sugar, that moment new sugar refineries will spring into existence. But if the trust has an advantage in transportation rates, where will the individual refiner be? He



will be crushed out of existence." In these days of combinations in trade, Mr. Gowen's opinion has a direct bearing upon their ability to do evil. One thing is clear—that at all hazards we must protect the individual against railroad favoritism toward any pool or trust.

### Pittsburgh and Chicago.

Both Pittsburgh and Chicago manufacturers are deeply interested in the published statements of prominent citizens of Pittsburgh relative to the greater advantages of Chicago for the manufacture of iron and steel, particularly steel rails. These statements are the more striking because it usually happens that the people of any locality are disinclined to admit that greater advantages are possessed by the residents of another section. In fact, it is a peculiarity of the average American to consider his own locality as just a little ahead of any other place. If that other place really possesses some striking advantages which are too apparent to be ignored or decried there are possibly points in which it is weak, and in the light of which satisfactory comparisons can be made. The prominence in the iron and steel trade which Pittsburgh has so long enjoyed has made that city the envy of almost every other locality in the country which can boast of iron and steel works of any magnitude. The aim of every growing town of this character is to be "a second Pittsburgh," or "to rival Pittsburgh," or "to surpass Pittsburgh." These ambitious utterances have been sweet to the ear of the Pittsburgh manufacturer, as they are all of them concessions to and acknowledgements of the overshadowing greatness in industrial matters of his marvelously enterprising city. The natural consequence has been that hitherto, in referring to the progress being made by other localities, the citizen of Pittsburgh has not been slow to speak of the advantages possessed by his immediate section and its ability to hold its own against at least any domestic competition.

This was the case even before the development of the possibilities of natural gas in cheapening the cost of manufacturing, and when the pride of Pittsburgh was its abundant supply of excellent coal at the very doors of its works. The advantages conferred by cheap coal had caused the industrial establishments of that city and its vicinity to multiply at a rapid rate, far in excess of the average industrial growth of the country, or even of the great manufacturing State within whose territorial limits it is located. But in direct illustration of the Scriptural edict, "To him that hath shall be given," Pittsburgh has in recent years been supplied more bountifully than any other part of the country with natural gas, the most perfect fuel ever furnished from the store house of nature. Since then the industries of the city and its vicinity have grown with more rapidity than ever and a more thorough diversification of interests has been accomplished. To-day the position of Pittsburgh is one of undisputed pre-eminence among American cities in numerous lines of manufacturing industry, and it is absolutely certain of occupying that position for many years to come, if not as long as

the country itself exists. It is very remarkable, therefore, that citizens of Pittsburgh should now be inclined to yield the palm in any respect to outside manufacturers.

But this is a great country, and there are other cities than Pittsburgh which can lay claim to some distinction in manufacturing iron and steel. Chicago, in particular, has a steel rail industry antedating that of Pittsburgh and contemporaneous with that of Johnstown. The first product of Bessemer steel for rails in Chicago was made in 1871, during the same year in which the first Bessemer steel was made at Johnstown, while the Edgar Thomson Steel Works at Pittsburgh made their first steel in 1875. No special stress need be laid in this connection on the rolling of the first Bessemer steel rail in America by the North Chicago Rolling Mill Company in 1865, as the steel from which it was rolled was an experimental product made at Wyandotte, Mich. Another steel-rail plant was afterward built at Pittsburgh, but three have been added at Chicago and in its immediate vicinity. In this one respect Chicago has therefore preceded Pittsburgh and has always maintained that supremacy.

For 13 years, or since the establishment of the Edgar Thomson Steel Works, in 1875, there has been competition between the Chicago and the Pittsburgh steel-rail mills. The works at neither point have existed merely by the forbearance of their competitors. Although the Chicago steel-rail manufacturers feel complimented by the assertion of Pittsburgh manufacturers "that the great developments of the future in the manufacture of steel are to be made in Chicago, and that Pittsburgh manufacturers will be compelled to look more and more to the Eastern market" to sell articles, like steel rails, which require little fuel in their production, yet the manufacturers of Chicago are themselves slow to claim the conceded advantage. They have in every way endeavored to cheapen the cost of manufacture, it is true, and are now using a minimum of fuel in making pig iron and a maximum of labor-saving appliances in making steel rails, but they assure us in reply to our interrogatories upon this subject that they have little hope of driving Pittsburgh or Western Pennsylvania out of the steel-rail business. Their modesty may cause them to utter this disclaimer, but it is well supported by the conservatism they have manifested in securing steel-rail orders for the current year. They hope to be able by economical management to hold a fair share of the steel-rail trade of the West, and in time to develop additional lines of manufacture offering an opportunity for the remunerative employment of capital and business energy, but they see no reason for alarm on the part of competitors having compensating advantages in production.

A dispatch from Washington, D. C., under date of the 2d inst., reads as follows: "Bids were opened at the Navy Department yesterday for furnishing 16-inch gun-lathes for the Washington Navy Yard. The following are the lowest bids: For six lathes, the Niles Tool Works, Hamilton, Ohio, \$400,800; for three lathes, Bement, Miles & Co., Philadelphia, \$117,500; for seven lathes, Binse & Hauschild, Harrison, N. J., \$100,000."

### OBITUARY.

#### Garrett Roach.

Garrett Roach, son of the late John Roach, the shipbuilder, and the active man of the firm of John Roach's Sons, died on the 2d inst. at his home, 245 West Seventy-fifth street. Mr. Roach's death, though sudden, was not a surprise to his personal friends. For a year he had been troubled with Bright's disease. On January 23 his wife Mary, to whom he was devotedly attached, died, and this broke him down. An attack of pneumonia on Sunday brought on his disease in an acute form, and he speedily succumbed to it. Mr. Roach was born 40 years ago at his father's house in this city. He was graduated at Williams College with honors, and immediately entered into his father's business. When the Morgan Iron Works were established Garrett Roach was made secretary of the corporation, his brother Stephen being treasurer, and his father president. John B. Roach, an elder brother, is the president of the Chester Iron Works, but in the reorganization of the great firm's business since the death of the father Garret Roach bore the principal part. Mr. Roach leaves two boys—Stephen, aged 8, and Belden, 6 years. He was a man of ability as a writer and speaker, of genial and kindly nature, and well liked by his workmen. His mother, the widow of John Roach, is in feeble health.

The secretary of the Iron and Steel Institute has issued the following circular to members: "The council of the Iron and Steel Institute has just received from the United States a number of letters, written by prominent members of the American Iron and Steel industries, in which is urged the desirability of postponing the meeting of the institute in that country until another year. The reason given for this recommendation is that during the whole of next autumn the American people will be fully occupied with the presidential election, which is likely to be so absorbing as to withdraw from the institute much of the attention that would otherwise be bestowed upon its proceedings. Our American friends are at the same time most cordial and unanimous in their invitation to hold a meeting in the United States as early as practicable. The council has therefore, with much regret, unanimously decided that the autumn meeting of the institute should not be held in the United States this year. They hope to be able before long to make an announcement of the locality selected for such meeting."

A suit was filed in the United States Circuit Court in St. Louis, on Saturday, by the Washburn & Moen Mfg. Company against the Southern Wire Company, of that city. Judgment is asked against the Southern Wire Company for \$271,501, and of that amount it is claimed that the Southern Wire Company is indebted to the Washburn & Moen Company for breaches of the covenant or license agreement in respect of royalty for the use of the Glidden patent to the extent of \$71,501. Damages in the sum of \$200,000 are claimed by the Washburn & Moen Company by reason of the conveyance of the plant, stock and business of the Southern Wire Company to the St. Louis Wire Mill Company, which, it is alleged, was a mere cover and scheme to violate the license agreement and evade the provisions of the contract.

The Monitor Iron Works, in Elizabeth, N. J., were burned last Friday, and the shear works badly damaged. The loss is estimated at \$50,000. Ex-Mayor Grace, of this city, is a heavy stockholder.

## FREE TIN PLATES.

### Their Probable Effect Upon Sheet-Iron Manufacturers.

A very important phase of the agitation for free tin plates, to which the general public and even the trade has paid but little attention, is the effect which a removal of the duty on tin plates would have upon American iron and steel sheet manufacturers. We print below a series of letters from leading makers in this country which will reflect their opinions:

*Marshall Bros. & Co., Philadelphia:* The black sheet-iron trade in this country is almost crowded out of existence on account of the large importations of tinned and terne sheets. The great consumption of sheet iron in this country is in tinware and roofing, and Great Britain has a complete monopoly of this branch of industry. If we were to take this nominal duty off (1 cent per pound), these foreigners, were they wise, could, or would, put this duty into their pockets, and therefore tin plates would not sell any cheaper. But, if trade is bad, and they would crowd the American market, they would completely run out the balance of black sheets we make. They take the black product, which comprises 95 to 97 per cent. of the article, and when they wash it over with tin, or lead and tin, calling it under the name of tin plates, it is brought over under a revenue duty of (1 cent per pound). Is it any wonder the majority of Americans are disgusted with our American Congress, who will stand up and legislate against American labor or industry. Our American Tinned Plate Association have done everything possible to show the inequalities of this clause, and so far with no effect with this Free Trade Committee.

*Marshall Iron Company, Newport, Del.:* The effect of putting tin plate on the free list would be very disastrous to our business. We make what is known as light sheet iron and sheet steel. It comes in direct competition with tin plate (or more properly sheet steel, with a very light coating of tin) for many uses. Under the present low tariff of 1 cent per pound its use is increasing rapidly each year, displacing just so much of American sheet iron and sheet steel, which was formerly made into stapled ware, water buckets, coal-hods, conductors, roofing, &c. The amount is very large, aggregating, in our opinion, to more than one-quarter of the total production of light sheet iron and sheet steel made in this country. Should Congress remove the present duty, as proposed, our mills in a short time would have to turn on something else or shut down entirely. There is great inconsistency in allowing sheets coated with tin to come in free, as proposed, while, if coated with zinc, they must pay a duty. The process for coating is the same in both, and can be done equally well here under the same protection.

*Park Bros. & Co., Limited, Pittsburgh:* We think a low duty on tin plate would prevent its ever being manufactured in this country, and that a duty to keep out the foreign article should be levied. If all the plate used in this country were manufactured within our territory it would give employment to thousands of people who are now idle and suffering for work, and at the same time be no hardship to the consumer.

*The Globe Rolling Mill Company, Cincinnati:* It is simply a question as to an inadequate tariff or no tariff. The present tariff is inadequate—that is, it does not protect. England makes all the tin plates. As a mere matter of protection to our industries we might as well have no tariff at all as a tariff not high enough to enable us

to compete with England. We are in favor of levying a duty high enough to keep out foreign inundation. It is of no use at all for protection if it is a little below the water-line. We are in favor of putting tin plates on the sheet-iron list, just where they were before Secretary Fessenden's disastrous decision, and do not care to make any great fight for a purely revenue tariff that is wholly worthless for protection.

*Laclede Plate and Sheet Mill Company, St. Louis:* We are very much surprised to notice a bill introduced into Congress for a reduction on tin plates. In our judgment this works a gross injustice to manufacturers of all kinds of iron and steel sheets used for various purposes that compete with tin or that tin would take the place of. Among the many industries that will be affected is iron and steel for roofing, which has grown to be a very large business. There are now in operation over 25 factories that use from 5 to 20 tons per day. The capacity of our mill is taxed to its utmost to supply material for roofing, and we feel sure that if duty on tin is taken off it will ruin this industry as well as our business.

*The McCullough Iron Company, Philadelphia:* We are very decidedly of the opinion that if the duty on plates should be removed it would have a very disastrous effect upon the consumption of American sheet iron and sheet steel. Our branch of the iron trade is in a very crippled condition at present, from the influx of foreign sheets under the present low duties, which Mr. Mills proposes to reduce still further, and adding to that free tin plates will come near to breaking up the industry of manufacturing sheets and plates in this country. Furthermore, the Mills tariff bill proposes a reduction in the duty on galvanized sheet iron, which is already barely protected. The duty on pig iron is to be reduced 72 cents per ton, and on galvanized sheet iron heavier than No. 20 gauge the reduction is \$13.44 per ton. In other words, the pig-iron duty is reduced 11 per cent., and the galvanized-iron duty is reduced 32 per cent. This does not seem much like reduced rates on raw materials, but quite the contrary. Should this bill pass and the galvanized-iron duty be fixed as proposed, and tin plates admitted free, the American manufacturers of galvanized sheet iron might as well shut up their works at once, for they cannot possibly exist under such circumstances.

*The Aurora Iron Company, Aurora, Ind.:* We do not know just what effect the passage of Mills bill will have upon our business, but can hardly see how taking the duty off can have any other effect than to demoralize the trade. The greater part of our product is sold to manufacturers of sheet-iron roofing, and if tin plate is free of duty it will make lower prices for it, and consequently will materially affect the roofing trade in sheet iron. We believe that the duty on tin plate ought to be raised instead of being lowered, and that it ought to be sufficiently protected to enable American manufacturers to produce it in this country at a profit. Everybody knows that it can be made here if it only has a limited protection. The consumption of tin plate in this country is enormous, and it is a disgrace to American people that none of it is made in this country. In our minds the only thing to be considered is: "Will the working-men of the United States be foolish enough to vote for any man for Congress who will vote to reduce the tariff, and thus indirectly be the cause of lowering the workman's own wages." If the tariff is reduced, prices will go down, and with it the wages of working-men, as no manufacturer will run at a loss, and it will only be a question

of shutting down or reducing wages; and we all know what the result would be in the end.

*St. Louis Stamping Company, St. Louis:* It is true that our free trade friends may be able to put forth a strong argument in favor of free tin plates, and, looking at the question merely from one standpoint, their point may be well taken, as long as tin plates are not made in this country. But, nevertheless, if this 1 cent of duty, which is equal to 20 per cent. ad valorem, is taken off tin plates will be adopted for a great many things for which sheet iron is now used. This would, as a matter of course, lessen the demand for sheet iron just to that extent, and a certain number of men now employed in producing that iron from the ore and coal beds to the finished sheets must look for employment in other channels, or else the price of labor must be reduced to a point where it can effectually compete with foreign labor. If any one will take the trouble to look into the iron business more closely, he will observe that the cost of iron is all labor from beginning to end, and that the profit put upon the finished product by the manufacturer as can be clearly proven has not exceeded 10 per cent., and in some cases not 5 per cent., for quite a number of years. When, therefore, our free trade friends say that it is the manufacturer that needs protection, you may put it down as all idle talk and that they are passing upon a question which they have not thoroughly investigated. Give our American manufacturer labor at the same price that the European competitor gets it and he will not ask for any protection. The whole question at issue, therefore, hinges upon this one point—namely, What or how much shall we pay those who labor? If we have free trade labor must work for exactly the same price it does in Europe. In other words, you will have pauper labor and a community without a purchasing power. Whether or not this would be advisable American policy is a question that we will not attempt to answer, but leave it to the wisdom of our national representatives. Steel plates and sheets are now being largely imported under the ad valorem duty, and at that rate they can be imported at a much lower figure than sheet iron can be produced. This also is working very depressingly upon the American manufacturers of sheet iron, and the final result will be that either this trade will have to be left to European manufacturers or else the wages of the operatives will have to be cut down in order to overcome this competition. It was our intention to have increased our mill capacity, but from the present outlook we think ourselves very lucky in not launching out any further in that direction. If the free trade faction of the Democratic party is to control the politics of the country, it is not difficult to foresee what hardships are in store for our manufacturing communities.

*Irondale Rolling Mill, Pittsburgh:* The removal of the duty on tin plates would be disastrous to our business, that of sheet steel and iron manufacturers, as it is with great difficulty we compete with it at the present low rate of duties.

*Canonsburg Iron and Steel Company, Pittsburgh:* In our opinion tin plates on the free list would be very disastrous to the manufacturers of black stamping plates, thousands of tons of which are now made and consumed in this country. With the present duty tin plates can be sold for stamping purposes as low as black plates made in this country can be furnished. This industry is a growing one, there being some 20 mills engaged in furnishing it. It would be wiped out entirely by lower-priced tin plates, as it is more a question of labor than of raw material.



*West Penn Steel Works, Leechburg:* The entrance of tin plate free of duty, in our opinion, would substitute tin plate to the extent of almost paralyzing the sheet business. Possibly it would be utilized to the extent of one-third of the fine sheet made in this country to-day. If the bill proposed would raise the duties on tin plate and all other manufactured metals it will reduce the surplus much faster than lowering it; but to those of us engaged in manufacturing material affected by the tariff, the constant agitation of it every time Congress meets is almost as bad as free trade, as it entirely demoralizes trade during the time of its discussion by Congress.

*United States Iron and Tin Plate Company (by W. C. Cronmeyer, Chairman), Denndler, P. O., Pa.:* If the tariff bill as now submitted by the chairman of the Ways and Means Committee, with tin and terne plates, or rather with iron or steel sheets, or plates or taggers, coated with tin or lead, or with a mixture of which these metals "is a component part," should become a law, it would mean the almost total suspension of the entire light sheet-iron industry, for no sheet-iron manufacturer in this country could any longer afford to pay the wages to sheet-mill workers which are now being paid. The rates would have to be reduced at least 50 per cent., and that such reduction could not be effected without serious labor troubles, strikes, &c., is evident. Imported tin and terne plates have all along been the keenest competitors of fine sheet iron, and while the yearly importations of tin plates have almost been doubled during the last ten years, the home production of sheet iron has not increased more than 20 per cent. (I have no official statistics at hand just now, but believe this estimate is nearly correct.) Such has been the case under and on account of the anomalous provision of the present law, which admits sheet iron in the most advanced state of manufacture at very much less duty (1 cent per pound) than the article from which it is made (1½ cents per pound). In our American sheet mills the workmen are paid about \$1 for every shilling or mark that workmen get for the same class of work in England or Germany; in Belgium the workmen get still less, and in consequence the manufacturers on the other side of the water could finish the sheet iron into tin plate and still sell it with profit at less price than would cover our cost of production on sheet iron. I believe that 50 per cent. of the sheet iron which is now used could be substituted by sheets coated with tin or lead, and probably more than that. When I was in Germany last year I was shown some sheet iron with a very thin coat of lead on it, so light that I did not consider the coating of any practical value; but if "iron or steel sheets coated with tin or lead, &c.," are to come in free the parties owning the process will have a perfect bonanza, because, as they claim, the process is a very cheap one, and large quantities can be easily turned out by it—they could flood this country with it, and the manufacturers of roofing iron, iron roofing, stove-pipe, coal hod, ash-pan, powder can iron, and many other kinds which would not suffer by a touch of lead, would be "knocked higher than a kite." Moreover, this phase in the Mills bill is very inconsistent with the recommendations contained in the message of President Cleveland, for it would place the control of the tin plate and terne plate trade still more firmly in the hands of very few importers, whose combined financial strength and influence on legislation we felt very bitterly when they forced us—who had established, under great expenses and sacrifices, a tin plate industry in America—to quit the business and to throw our costly machinery on the scrap pile. It would further induce the foreign manufacturers to

reconstruct their syndicate for advancing the price of tin plates, which syndicate has just been nipped in the bud by a warning that the American tin-plate works would be put in operation as soon as the price would advance a little over present selling prices. It would further seriously cripple or perhaps kill an existing American industry on which about 100,000 people depend for their livelihood; the latter would be deprived of their subsistence and reduced to poverty. The President recommended that the tariff be revised in such a manner that it did not encourage trusts or combinations, did not cripple any industry, and did not hurt any class of workmen, and therefore we rest easy that the President cannot help vetoing such a bill as long as it has tin plate, &c., on the free list.

*Whitaker Iron Company, Wheeling:* In our opinion no greater calamity could happen the sheet iron and sheet steel interests of this country than the placing of tin plates on the "free list." It could only be exceeded by a radical reduction or absolute removal of duty on the sheet iron and sheet steel itself. There is no sheet iron maker in America who has not found, to his disappointment and injury, that the low duty upon tin plate, and the many pernicious frauds that are perpetrated under the guise of tin plate, have been, and are now, injuring his business very seriously, and we most earnestly deprecate the decrease of duty, either upon tin plate or upon sheet iron. It is to be hoped that American manufacturers will receive that recognition which is due them from our representatives in Congress, that will protect them from the inroads of British sheet steel. The duty upon tin plate should be advanced, rather than reduced, in the interests of American manufacturers and American workmen. It is a mortifying spectacle for the American people, through their Congress, to submit to the world and to our competitors abroad, that the best interests of the people, the interests of every miner, manufacturer and producer should be prostituted and sacrificed for the selfish purposes of the body politic; and we believe there is a keen appreciation of the facts taking hold of the public mind in all its branches, and in every situation and position, that will assert itself, making the weight of its opinion felt upon our public servants who have the temerity to trifle with the interests of the country, as many of our prominent politicians seem disposed to do. It is to be hoped that in the heat of passion growing out of differences of opinion between employers and employees the latter will not so far forget themselves and their interests as to lend their influence even to the slightest extent towards a manifestation of interest in common with those who are placing themselves in direct opposition to the interests of American people. Such questions must necessarily arise in all vocations and in all classes of manufacturing, but they are differences that should be settled upon their merits alone, and neither party should be induced through heat to bring into the issue such dire calamities as must follow an abolition or reduction of duty for the mere satisfaction of inflicting punishment upon those who differ with them.

*Ætna Iron and Steel Company, Bridgeport, Ohio:* It is putting it very mild to say the effect of free tin plates would be damaging in the extreme, not to say destructive. At least three-fourths of the light sheet iron we make is sold to sheet-iron roofers and worked up by them into roofing and siding of various kinds. The price at which such sheets are now sold leaves us but little or no margin for profit, and iron roofers complain that they can ill afford to pay even current prices and compete with manufacturers of tin

roofing. It may be clearly seen from this that if tin plate or sheet iron coated with tin, lead, &c., be admitted free of duty, the business of making sheet-iron roofing will be brought to a sudden and disastrous end, unless the rolling mills making the sheets can lower the cost of production so as to offer such sheets at a price that will prevent the use of tin plate or other imported coated sheets. This can only be done by a great reduction in the wages of labor, a reduction not only affecting the wages of workmen in the mills immediately producing this class of sheets, but affecting all workmen along the line leading thereto from the ore and fuel mines. No such reduction is desirable, nor would it be possible while the other products of iron are receiving protection. Should tin plate be put on the free list, the outcome would be the stoppage to a large extent of mills whose product runs in the same line with ours. Besides roofing, there are many other uses to which sheet iron and sheet steel are now applied and from which they would be crowded out if tin plate should be admitted free of duty. In our opinion, no greater disaster could happen to the sheet-iron trade than admitting tin plate free of duty, unless it would be admitting all kind of sheet iron free of duty.

#### Legislative Report on Trusts.

The General Laws Committee of the New York Legislature on Tuesday submitted to the Senate a report of its investigation on trusts. The following are extracts:

"During the investigation the formation, management and effect of the following combinations, commonly known as trusts, were made the chief subjects of inquiry: Sugar, milk, rubber, cotton-seed oil, envelopes, elevators, oilcloth, the Standard Oil, butchers, the Glass Trust and the Furniture Trust. However different the influences which gave rise to these combinations may be, the main purpose, management and effect of all upon the public is the same, to wit: The aggregation of capital, the power of controlling the manufacture and output of various necessary commodities; the acquisition or destruction of competitive properties, all leading to the final and conclusive purposes of annihilating competition and enabling the combinations to fix the price at which they would purchase the raw material from the producer, and at which they would sell the refined product to the consumer. In any event the public at each end of the industry, the producer and consumer, is, and is intended to be in a certain sense, at the mercy of the syndicate, combination or trust."

The report reviews the organization and history of the several trusts investigated, criticises the motives actuating their formation, denominates them as a vexation to the public, concluding: "And for these evils what is the remedy? We are not unmindful of the fact that this State, easily first in point of commercial importance, has always called capital into its borders by wise and equal laws here enacted for its protection. No departure from this rule is necessary. A wise people will always find a remedy consistent with its own prosperity for every great evil of the State, and in this case capital should be subjected to the rule of which it has always claimed to be the strongest advocate—that no combination or conspiracy should be tolerated in this State which would interfere directly or indirectly with the exercise of the boldest competition in every industry or calling. Your committee will at an early day report a bill which will, if it becomes a law, modify, if it does not prevent, the greater evils complained of."

## MANUFACTURING.

## Iron and Steel.

The Standard Iron Company, of Bridgeport, Ohio, manufacturers of sheet iron and sheet steel and corrugated roofing, &c., have under contract an extension of their plant, consisting of one 20-inch sheet mill train and one three-high 24-inch plate and jobbing train. These trains are being made especially heavy, and in their design and construction are intended to be second to none for the class of product to be made. The new mills are expected to be ready for operation by July 1 next.

The nail factory of the Consolidated Wellston Coal and Iron Company, at Wellston, Ohio, has been idle for more than five months. A new steel plant is being added to the plant of the above firm, and when completed the nail factory will probably commence operations.

J. F. Darnell, president of the Greencastle Iron and Nail Company, of Greencastle, Ind., under date of February 27, writes us as follows: "We are running our nail factory full time. The demand is good, but prices are not remunerative. Indications throughout the West point to a heavy consumption for the present year, exceeding the past year in all departments of the iron trade with the exception of nails. The fact of removal of our plant has been determined, but the place to which we will remove has not yet been decided upon, but will probably be in a short time."

The Penn Iron and Coke Company, of Canal Dover, Ohio, are just completing a new hot-blast oven of the Pollock pattern. This will be the fourth oven of the above pattern built by this firm, who will run with three working and one in reserve. The above company operate the only blast furnace in the Tuscarawas Valley, Blackband region, and mine that ore from their own ore mines, and make a special brand of iron known as "Tuscarawas," made of half Blackband and half Lake Superior hematite ores. The company have just entered on the third year of their existence, and report the outlook for business this year as being very bright.

The following is the record of the blast furnace of the Bellaire Nail Works, of Bellaire, Ohio, for the last three months:

	Tons.
December product.....	4,762
January ".....	4,756
February ".....	4,503

Total product for the three months. 14,021

The average coke actually used per ton of iron of 2268 pounds was 2130 pounds. The product was all No. 1 and No. 2 Bessemer, the greater portion being No. 1. The furnace is 16 feet bosh and 75 feet high, and equipped with iron stoves. From present appearances the furnace is good for equally as good results for the next three months.

From the Steelton (Pa.) Reporter, of the 3d inst., we take the following information regarding operations at the works of the Pennsylvania Steel Company at that place: "Business around the works of the Pennsylvania Steel Company presented a bright and cheerful appearance yesterday. The departments were working up to their full capacity, and the product of the week will be the heaviest of the year so far. No. 1 Bessemer mill has put on another cupola, which will increase the output. No. 2 Bessemer made a heavy run during the week, and shows a large output. Both furnaces of the open-hearth are in operation and were on special steels. Two sets of castings, weighing 53,000 pounds, were poured with open-hearth steel this week. No. 1 blooming mill has been very busy and has used up part of the production of No. 1 and all of No. 2 Bessemer. No. 2 bloom-

ing mill is on nail plate exclusively. The hammers were on forgings for Government steel for three days; the balance of the week on billets, slabs, &c. The rail mill started up on 70's, section 56, and changed rolls to 60's, section 6, on Tuesday, and are still running on the same order. The mill made a good run all week, and several days made over 600 tons of rails. The machine shop has been working several nights this week to get through with pressing orders. The foundry prepared molds for several steel castings, besides turning out the usual quota for home use. The frog, switch and signal department continues busy—working day and night. A slight reduction in wages took effect on the 1st inst., made necessary to meet competition in some branches in the trade. The workmen have accepted the reduction and all are at work. The merchant mill has been busy on rails, billets and small sizes of merchant steel, and is running very successfully. The billet mill is running splendidly and shows a heavy production. The boiler-makers have all the work they can turn out, and plenty of orders ahead of them. The pattern-makers and carpenters continue very busy. The stone masons appear very busy for this season of the year. The iron framework for the new experimental mill is being erected and will be pushed to completion. The steel castings, &c., will be made in this department when finished. The Government inspectors were at the works this week making an inspection of material."

At the annual meeting of the stockholders of the Nashville Iron, Steel and Charcoal Company, of Nashville, Tenn., held recently, the following officers and directors were elected: Willard Warner, president and general manager; M. A. Spurr, vice-president and treasurer; E. W. Cole, T. M. Steger, Samuel Cowan, B. H. Steif, J. H. Moore, L. Rosenheim, Wm. Porter, R. L. Morris, Wm. Morrow; E. P. Copeland, secretary.

The puddling department of Mill D, of the Catasauqua Mfg. Company, at Ferndale, Pa., resumed operations on the 5th inst., after an idleness of several weeks.

On Tuesday, the 28th ult., blast furnace No. 6 of the Crane Iron Company, at Catasauqua, Pa., was put in blast. The furnace was banked several weeks ago on account of the poor quality of coal received.

The Decatur Iron Company, of Decatur, Ala., have been incorporated, with a capital of \$200,000.

The business of the Sharon Steel Casting Company, of Sharon, Pa., is steadily increasing, the severe tests to which the products of their works are subjected and the general first-class workmanship evinced giving satisfaction to their increasing custom. During the month just closed the works have made nearly 150 tons of castings. Their good work in the manufacture of car wheels has secured for them a steady run of orders for that line of goods.

Owing to a lack of orders the sheet mill of the Reading Iron Works, at Reading, Pa., shut down on Saturday, the 25th ult. With the suspensions that have already taken place in other departments of the same establishment nearly 600 men are now idle. The departments will remain closed until business improves sufficiently to warrant a resumption.

Mr. E. D. Campbell has severed his connection with the Sharon Iron Company, of Sharon, Pa., to accept a position with the Dayton, Tenn., Coal and Iron Company as chemist and assistant manager of their blast furnaces.

Toward the end of last year the Oxford Iron and Nail Company, of Oxford, N. J., asked their men to accept a reduction in

wages ranging from 8 to 10 per cent., a reduction to which the majority agreed, until shortly before the time of its going into effect, they fell under the spell of a few agitators, who are Knights of Labor, the most disaffected being a number of puddlers, whose wages were to be reduced from \$3.75 to \$3.50 per ton. Late last year the men went out, and have remained idle during the months of January and February. Last week a letter was received from the headquarters of the Knights of Labor in Philadelphia, in which a complaint was uttered against the manager of the works on the ground that his conduct toward the men was overbearing. Subsequently, Barry, one of the officials of the organization, asked for an interview, and, accompanied by one of the men of the company, called upon the superintendent at the works. The man in question denied himself that there was any ground for complaint against the manager. A conference was asked for on Friday, and, after it had been refused, to the Knights of Labor as such, the men entirely abandoned their position and decided to go to work on the terms of the company next week.

Eight more carloads of foreign machinery have arrived at the new steel mill of the Bethlehem Iron Company, at Bethlehem, Pa., from Perth Amboy, N. J.

The ironwork for two of the Tennessee Coal, Iron and Railroad Company's four furnaces, at Ensley, near Birmingham, Ala., is about completed and it is expected that they will be blown in about the 15th ult. The management of the DeBardeleben Coal and Iron Company hope to light the fires in the first of their two at Bessemer, in the same district, about the same time. The Pioneer Mining and Mfg. Company's stack will not be far behind either. A considerable job of reconstruction, made necessary by bad masonry, will give the two stacks of the Sloss Iron and Steel Company, at North Birmingham, a back-set of a month or more.

The following, according to the *Bulletin*, are the stockholders of the Pulaski Iron Company, of Pulaski, Va., whose furnace has just been put in blast, mention of which was made in a recent issue: A. J. Drexel, Clarence H. Clark, E. W. Clark, George C. Thomas, George S. Benson, Burnham, Parry, Williams & Co., Edward Samuels, F. J. Kimball, E. S. Borden, and Abraham S. Paterson, of Philadelphia; State Treasurer-elect Capt. William B. Hart, A. J. Dull, Charles L. Bailey, and Andrew S. McCreath, of Harrisburg; Mr. C. G. Ramsay, of Norfolk, Va.; and Thomas Wilde-Powell, of Vivian Gray & Co., Mahlon Sands, and Col. Frederick Burt, of London, England. The furnace is of modern design, having a stack 75 feet high by 17 feet bosh, equipped with three Whitwell hot-blast fire-brick stoves, 60 feet by 20 feet each, and two big blowing engines, and will probably make 150 tons of iron per day. In addition to the furnace the company own their own ore mines in the Cripple Creek mineral region, near the furnace, on the line of the Norfolk and Western Railroad.

The Linden Steel Company, Limited, of Pittsburgh, have recently gone into the manufacture of thin steel plates for use in sidewalks, floors, &c. A patent has been applied for and will cover plates of different styles and thickness of checker and diamond surface, which it is believed will prove quite an improvement and a saving in weight and cost. The article is the invention of Mr. W. J. Lewis, president of the above-named company.

The Moorhead-McCleane Company, proprietors of the Soho Furnace and Rolling Mills, at Pittsburgh, have decided to make



some extensive improvements and enlargements to their blast furnace. The contract has been given to Riter & Conley, also of that city, who will reconstruct the plant, and the proprietors of the furnace will furnish the material. Three Cowper stoves will be added, each 19 feet in diameter by 75 feet in height. A stack of wrought iron will be built 8 feet 6 inches in diameter and 160 feet high. The contract price for these improvements is \$45,000, and will greatly increase the capacity of the furnace. At present it is making 700 tons per week.

The Armstrong Coal, Coke and Iron Company is the name of a new organization recently formed at Pittsburgh, with a capital stock of \$35,000, and for which a charter of incorporation has been applied for. George W. Everson, of Pittsburgh, is president, James Lott, of Scotsdale, Pa., is secretary, and William M. Acheson, of Kittanning, is treasurer. The company have purchased 500 acres of coking coal land near Kittanning and 500 acres of steam coal land. There is on the property a 2½-foot vein of iron ore and a 12-foot vein of limestone. It is proposed to build 150 ovens for the manufacture of coke, 60 ovens to be built within two months, and the remainder during the summer. There are on the property 60 houses in course of erection, and the company will give employment to over 600 men.

Sharpsville Furnace, of the Sharpsville Furnace Company, at Sharpsville, Pa., has been banked down on account of the present depression in the pig-iron market.

At a meeting of the blast furnace owners of the Mahoning Valley, Ohio, held last week it was unanimously decided to make a reduction in wages. On Saturday afternoon, the 3d inst., at each of the furnaces through the valley, the employees were notified that on March 25 the wages would be cut 10 per cent. In 1886, when the price of pig iron advanced, wages were increased 10 per cent., and it is now the intention to pay the same figure as before the advance was given. The furnace owners claim that the price of iron has dropped to a point that necessitates a reduction, otherwise the furnaces will have to shut down.

Notice has been given of a reduction of wages in the Central Iron Works, the Bailey Nail Works and the Paxton Rolling Mill, at Harrisburg, Pa., to take effect March 5th. The puddlers will receive \$3.75 per ton, a reduction of 25 cents. Similar notice has been given at the Duncannon Mills. The puddlers of the Phoenix Iron Company's mill, at Safe Harbor, Pa., have accepted a reduction of wages to \$3.60 per ton.

It is stated that Henry Wick, who recently took charge of the plant of the Warren Rolling Mill Company, at Warren, Ohio, will expend about \$20,000 in putting the works in shape to run. It will require two months work to do this, and it is expected that by that time the iron market will be in such a condition as will warrant the starting of the plant.

Jupiter Furnace, of the Jupiter Iron Works, at Carondelet, Mo., has been blown out for the purpose of being relined and making other repairs.

The Shickle, Harrison & Howard Iron Company, St. Louis, have recently taken contracts for a large steel water tower for St. Marysville, Cal., and for one for St. Cloud, Minn.

The situation at the Edgar Thomson Steel Works of Carnegie Bros. & Co., Limited, at Braddock, Pa., remains the same as noted in our issue of last week. All departments of the works, including the seven blast furnaces, are still idle, and

from present appearances a resumption of work will not take place for some time to come.

It is considered very doubtful whether the rolling mill and nail works of Rogers & Sheldon, at East Bridgewater, Mass., which were recently destroyed by fire, will be rebuilt. The firm paid out during the year 1887 about \$40,000 in wages to their workmen.

The old Kenyon foundry, at Steubenville, Ohio, has been purchased by George L. Coundon & Son, who will engage in the manufacture of castings at present, and in the near future will commence the manufacture of stoves, grates and fronts. The above works were nearly ruined by the flood of 1884, and have not been in operation since.

#### Machinery

Messrs. James Beggs & Co., 9 Dey street, New York, have just issued what they term an illustrated engineers' and steam-users' handbook. It contains a very complete set of illustrations of tools and supplies for the use of engineers and power-users, and will, no doubt, prove of interest and value to them. Price lists are given, together with tables of sizes and brief descriptions.

John Adt & Son, in New Haven, Conn., recently finished a wire-cutting machine of a special pattern, intended to cut wires for the wire brushes of dynamos. This machine has been shipped to the Edison Machine Works, at Schenectady, N. Y., and will be used in the shops of that company. A similar machine was sent to the Allgemeine Elektrische Gesellschaft, of Berlin, Germany.

In a recently issued catalogue the Detroit Lubricator Company, of Detroit, Mich., fully illustrate their locomotive lubricating devices. Engravings and a brief description are also published of the Garfield injector, of which the company have obtained exclusive control, and of the Killmer metallic packing.

The Morris Machine Works, of Baldwinville, N. Y., have issued a new catalogue specially devoted to boilers of their manufacture. A number of different designs are illustrated and briefly described, and tables of sizes are given.

Mr. A. Mugford, of Hartford, Conn., has just sent us a new number of his "Manufacturers' Exchange," devoted to the interests of his departments of wood engraving, printing and electrotyping. The specimens of engraving shown are finely executed, and will probably more than anything else commend Mr. Mugford as an engraver. The text is made up of pertinent paragraphs on the requirements of wood engraving, estimates of cost, &c.

The Chicago Tire and Spring Works, of Chicago, Ill., were taken out of the hands of the receiver last December. Charles H. Ferry purchased the works and turned them over to the Chicago Tire and Spring Company, who are now operating them. The new company have a capitalization of \$300,000, and started without liens or any other indebtedness. Notwithstanding the receivership and the enlargement of the affairs of the company by litigation, their business has constantly increased during the past year, and substantial improvements in the plant were made. Their prospects for the future are now excellent, as litigation over the ownership of the works has been completely ended. The main office of the company has recently been removed to the Phoenix Building, corner Clark and Jackson streets, Chicago. Chas. H. Ferry is president and treasurer.

The Wainwright Mfg. Company, of Boston, report the following shipments of their feed-water heaters during the month of February: two to Fall River, Mass., three to New York City, two to

Providence, R. I., two to Philadelphia, two to Louisville, Ky., and one each to Ware and Orange, Mass., Portland, Me., Rochester and Brooklyn, N. Y., Port Richmond, Staten Island, Greenpoint, Long Island, Newark and Paterson, N. J., Burlington, Vt., Fayetteville, Tenn. and Fort Smith, Ark. They have also recently issued a new illustrated circular devoted to their manufactures.

Since January 1, 1888, the Babcock & Wilcox Company, of New York, have placed the following orders for boilers:

	Horse power.
Seaboard and Roanoke Railroad, Portsmouth, Va.	146
American Tube and Iron Company, Middletown, Pa.	51
Cumberland and Presumpscot Mills, Cumberland Mills, Mo.	120
Bessemer Water Works, Bessemer, Ala.	90
Millward, Bradbury & Co., Liverpool, for Bahia, Brazil.	83
Edison-Swan United Electric Lighting Company, Limited, London, England.	468
H. F. Stores, London, for Brisbane, New Zealand.	194
Kohlstedt & Gramberg, Nordeney, Germany.	25
Hugh Kelly, New York City, for Cuba.	208
Jas. Simpson & Co., Limited, London, England.	180
Sala Pon & Co., Barcelona, Spain.	104
Allegheny County Light Company, Pittsburgh, Pa.	365
Augustin Goytsolo, Cienfuegos, Cuba.	65
Acadia Coal Company, Stellarton, N. S., third order.	156
John Barry, Ostlere & Co., Limited, Kirkcaldy, Scotland.	208
Arthur Butler, for India.	35
Woodward Iron Company, Woodward, Ala., third order.	102
Chatham, Rochester and District Electric Lighting Company, Rochester, England.	124
Bird Coleman Furnaces, Cornwall, Pa., third order.	150
Imprimerie Francaise, Paris, France.	123
Lombard, Ayres & Co., Bayonne, N. J., 14th order.	208
Lombard, Ayres & Co., Bayonne, N. J., 15th order.	208
Schenectady, N. Y., Locomotive Works.	146
Gastonia Cotton Mfg. Company, Gastonia, N. C.	82
W. W. Taylor, third order, for Greensboro, N. C., water works.	45
Metropolitan Street Railway Company, Eighth street line, Kansas City, third order.	600
Takata & Co., London, for Japan.	249
Compagnie des Omnibus et Tramway de Lyon, France.	90
Evans & McEwen, Cardiff, Wales.	140
Ziffer & Walker, Manchester, for Bahia, Brazil.	124
Bradley & Craven, Wakefield, England.	108
Beare & Sons, Norwich, England.	65
A. M. Dorman, Maidstone, Kent, England.	86
Walker Bros., London, for Ceylon.	15
Emile Roussel, Roubaix, France.	372
Anglo-American Electric Light Company, for Royalty Theater, Glasgow.	25
Société des Ciments Francais et de Portland, Boulogne-on-the-Sea, France.	612

The Hall & Brown Wood-working Machine Company, of St. Louis, have been incorporated, with a paid up capital of \$100,000. Gorham O. Hall and Chas. S. Brown hold 499 shares each, while William B. Thompson has two shares.

#### Hardware.

P. & F. Corbin, of New Britain, Conn., have decided to build an addition to their main factory. The one-story wooden building which runs south on Orchard street will be replaced by a large brick structure 140 feet long, 45 wide and six stories high. At the extreme south end of this building a 50 x 45 wing running west will be erected, also six stories high.

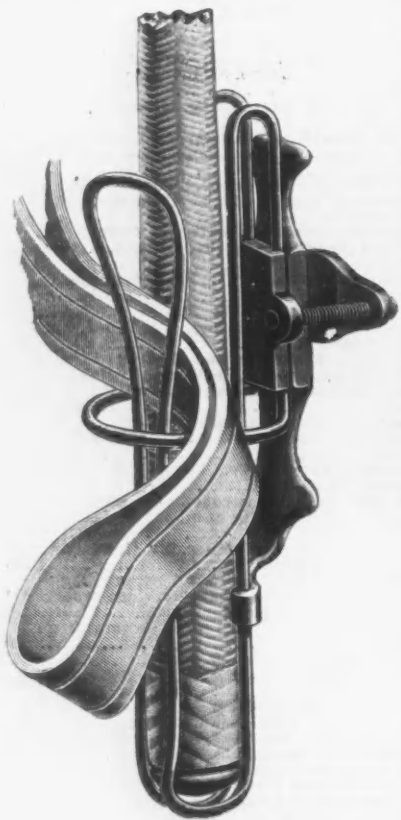
The factories of the North & Judd Mfg. Company in New Britain, Conn., the largest manufacturing company of saddlery hardware in the country, were totally destroyed by fire. Loss, \$25,000 to \$50,000; insurance, \$90,000.

The Freeman Wire Company, East St. Louis, are overhauling and remodeling some machinery which they have on hand, with a view of increasing their capacity to 50,000 pounds of barb wire per day.

The barb wire addition to the plant of the Braddock Wire Company, at Rankin Station, Pa., has been completed and the manufacture of barb wire will be commenced in a few days. The new works have a capacity of about 2000 tons per month.

### Universal Whip and Rein Holder.

The Phillips-Getman Company, Ilion, N. Y., are putting on the market the whip and rein holder represented in the accompanying illustration. It consists of one continuous piece of steel wire, which is firmly fastened to the backpiece, by which the holder is attached to the dashboard. When the whip is inserted the socket gradually expands to suit the dimensions of the whip, when the compression of the spring is such as to hold the whip firmly, as indicated in the cut. It is pointed out that by this construction the socket never fills or clogs with water or dirt, thus permitting its use in any weather. The fact that it holds whips securely without wearing the cover, and will adapt itself to any



*Universal Whip and Rein Holder.*

size of whip without changing the spring, as well as its utility as a rein holder, are especially alluded to by the manufacturers.

### Slat-Jacketed Oil Can.

The series of oil cans for store and domestic use manufactured by W. J. Clark & Co., of Salem, Ohio, have been before the trade for some time past. Frequent additions have been made to the assortment in an endeavor to keep before the trade those kinds which are most in demand and which best meet the wants of buyers. Quite recently they have added a new can to their stock which is known in the price list as "C." It is better described, having reference to its features of construction, as a slat-jacketed can. It is shown in the accompanying engravings. It is a pump can and embodies some of the patented features which are included in other cans made by this firm. The pump, unlike more expensive cans, does not adjust up or down to suit various heights of lamps; but instead, swings around, as shown in the second engraving, thus making it convenient to fill a lamp of any kind whatsoever. The slat jacket, with which this can is provided, is a new feature and possesses several important advantages over the wood jacket commonly used on shipping cans.

It is bound tightly around the can, fitting snugly against its sides throughout, thus affording the very best protection. The result is a more compact and substantial looking structure than a can incased with



*Clark's Slat-Jacketed Oil Can.*

the common jacket. Jackets of ordinary construction are made complete, like buckets, before being joined to the can; hence are large enough to allow the can to slip easily inside of the jacket. They do not fit closely; but, instead, rattle upon the can, and, in many cases, are so poorly attached that the jacket comes off in a short time and is thrown away. Further, the common jacket has a tendency to shrink and swell, something which, it is claimed, is entirely overcome by the slat jacket shown in the accompanying illustrations. The open nature of the slat jacket prevents the retaining of oil which is slopped over or spilled by accident or carelessness between the jacket and the can. Accidents of this kind, in the case of the common jacket, which has tight sides and a wooden bot-



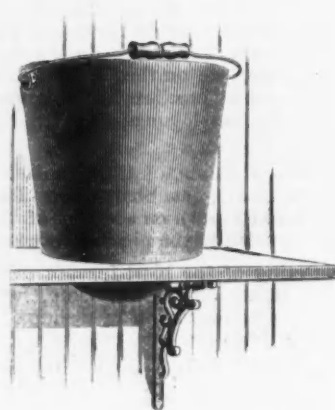
*Method of Using Pump.*

tom, forming, in fact, a bucket from which the oil cannot escape, result in the imparting of an unsightly appearance to the can and make the article disagreeable to handle. The sides of this can as well as the jacket project below the can bottom, so as to protect the latter from damp floors, &c., which would otherwise have the effect of causing it to rust. This article, we are informed, is being put upon the market as cheaper in price than other devices of its class, and yet having intrinsic merits which recommend it to the attention of the trade. From the sample which we have examined,

and from which the engravings here shown were made, we think the can is destined to become a general favorite.

### New Pattern Fire Pail.

The accompanying illustration represents a fire pail which the Union Indurated Fibre Company, 110 Chambers street, New York, are putting on the market. It is made of their well-known Indurated fibre material, to which we have had occasion frequently to refer, but the pattern herewith represented has, it will be seen, a hemispherical bottom projecting so that the pail cannot be conveniently used for anything but fire purposes, thereby removing the temptation to divert it to ordinary uses. It is intended to be hung up or placed in shelves, as shown in the cut. In their recent report the Associated Factory Mutual Insurance Companies allude to the superiority of the Indurated fibre ware as a material for fire pails, which are referred to as follows: "They have been subjected to careful tests, the most thorough one having been to keep one of these buckets partially



*New Pattern Fire Pail.*

filled with water in the window of one of our offices in this building since the 15th of August, 1885. A recent examination of this pail, after it was thoroughly washed, showed no indication of any action of the water upon the material or of the deterioration of the pail in any way."

E. M. Blum & Co., of this city, agents of the Barcelona Exhibition, have been informed by cable that the time for admitting goods intended for the International Exhibition has been extended till the last of April. Her Majesty, the Queen, will formally open the fair early in May. The Great Cross Railroad of Catalonia, on which work has just been begun, will start from the important capital of Tarragona, will then pass through 40 leading cities and towns of that section and terminate at the Port of Rosas, close to the frontier of France. It will cross 15 railroads and have a length of 160 miles. The representatives of some American manufacturers are striving to obtain the contracts for equipping this road with American rolling stock, as it is through this same province that the only road in Europe operated with American engines and cars runs. The Grand International Hotel of 1000 rooms, to be opened to accommodate visitors to the exhibition, has just been roofed. It is all of brick and stone and has a frontage of 630 feet. The work has been accomplished in 53 days.

At a special session last evening of the Engineering Society of Stevens Institute, at Hoboken, N. J., Mr. George S. Strong read an interesting paper on the Strong locomotive.



### Novelties in Coal Boxes.

We have on different occasions directed attention to a certain class of coal boxes which are in use in Great Britain, but which, so far as we are informed, have not been to any great extent introduced into the United States. Current issues of the furniture papers and architectural journals published on the other side contain illustrations of new designs of this class of goods, which have been brought out for the season's business. A few of these we think will interest our readers, particularly because they suggest styles and constructions which it would

shown in the cut. A place for the shovel is also provided. The engraving above it represents still another novelty of the same class made in metal, and is in the form of a tipping vase swung in an iron stand. The vase itself is made of copper, and has a very ornate front. The stand is of iron. We are assured that the effect of this design is very excellent, the happy blending of the two metals being pleasing in every respect.

Philadelphia papers publish descriptions of an enormous electric plant to be erected by the Edison Company in that city at a

On the fourth floor huge boilers, with a capacity of 5000 horse-power, will be placed, and above them will be stored over 1000 tons of coal at a time. The dynamos on the floor above the engines will weigh 7 tons each and will make 650 revolutions a minute. They will rest on heavy iron beams supported by iron pillars, each pillar being capable of upholding 500 tons. Other pillars and beams support the floors above the boilers, furnaces and coal. The coal is to be driven upon scales, weighed and dropped into a pit. Shutes will be so arranged that the coal can be readily loaded on elevators and



The "Waverly" Coal Vase.



The "Malvern" Coal Box.



The "Rob Roy" Coal Box.



The "Wigan" Coal Vase.

seem advantageous for some one to introduce upon this side of the water. One of the designs shown among the illustrations is called the *Malvern*. It is a typical example of the wood coal box of the kind to which attention has just been directed. It is mounted with substantial brass fittings, and the lid is embellished with highly effective carving. Another coal box shown on this page is similar in shape to the wood box already referred to. It is called the *Rob Roy*, and is made of polished brass, the front being decorated with metal marquetry panels, the designs employed being *Earth and Fire*. The *Wigan* coal vase, also shown herewith, is a novel shape, and is in every respect very much more desirable for use than the conventional coal hod of the American market. It has a beautifully embossed front and is handsomely finished. The handle falls down back of the vase, as

cost of \$1,000,000, under the direction of Prof. W. D. Marks, of the University of Pennsylvania. The building will be 70 x 100 feet, wholly of indestructible materials, the cornice towering 114 feet above the pavement. Twenty engines, of 250 horse-power each, will be placed on the first floor. Forty dynamos, with a capacity of 1500 lights each, or a total capacity of 60,000 lights, will rest on the second floor. On the floor above the dynamos will be the workshops. On the third floor there will be placed two blast-fans, capable of driving 50,000 cubic feet of air per minute into the furnaces. The smoke and other products of combustion will be carried from the furnaces into two chimneys of 9 feet internal diameter. These chimneys or smoke-stacks will appear merely as bay-windows, starting at the third floor and reaching to the roof.

carried to the fifth floor. There the coal will be dropped into bins, from which a pipe runs at an inclination to the furnace of each boiler. The sixth floor, where light and air will abound, will contain the general offices of the company.

Scherpe & Koken, proprietors of the Enterprise Architectural Iron Works, Eighth street and Park avenue, St. Louis, have incorporated under the name of the Scherpe & Koken Architectural Iron Company, with a paid-up capital of \$100,000. John T. Scherpe and Wm. T. Koken hold 499 shares each, and Chas. W. Koppen holds two shares.

Benwood Furnace, of the Benwood Iron Works, situated at Martin's Ferry, Ohio, will be blown out in a few days, for the purpose of making needed repairs.

## Foreign Markets.

## EQUIVALENTS.

	Cents.
Franc, Peseta or Lira.....	19.3
Florin (Netherlands).....	40.2
Florin (Austria).....	35.9
Milreis (Portugal).....	61.08
Milreis (Brazil).....	54.6
Mark (Germany).....	25.4
Kilogram.....	220.5
Picul.....	134.

## GREAT BRITAIN.

The Pig Iron trade of the North of England has been quiet. The quotation of sellers for prompt delivery is about 31/6 for No. 3 G.M.B., buyers offering rather less. The merchants' figure for forward delivery to June is 31/9. The shipments are reported rather better. Pig Iron at Newcastle also continues quiet. In Lancashire and Staffordshire business has been quiet and dull. The Hematite market in the Northwest has been steady. Mixed numbers of Bessemer Iron have been changing hands at 43/6 @ 45/, f.o.b., although Hematite warrants have been negotiated at from 42/6 to 43/. At Glasgow the warrant market has been dull, and prices to-day close at 39/2½ @ 39/3, cash, and 39/5 @ 39/5½, one month.

The Manufactured-Iron trade of the North of England has been fairly steady, although prices are not overstrong. Plates are £5; Angles, £4, 12/6; Bars, £4, 17/6, less 2½%. Manufactured Iron is in fair demand at about late rates on the Tyne. Trade in South Staffordshire is in a quiet condition. Prices are maintained at £6, 15/ @ £7 for Sheets (Doubles); Hoops, £5, 5/ @ £5, 7/6, and Strip, £5, 2/6 @ £5, 5/. The export trade in Finished Hardware appears to be somewhat improving. The Tin-Plate trade still continues in an anomalous condition.

In the Northwest Steel Rails have been in rather better request at the full rates of last week—viz., £4 for heavy sections of Rails, net, f.o.b. In the Steel Shipbuilding Material department there has been a steady and brisk demand. Plates are quoted at £7, 2/6, and Angles at £6, 7/6, net, f.o.b. Blooms are in improved demand at £3, 12/6 @ £3, 15/. and Billets find an active market at £4, 5/. Wire Rods remain steady, but quiet, at £5, 17/ @ ton for No. 5 Standard, and £5, 18/6 for Standard 6. In Wire and Hoops there is a brisk trade, and the latter are still quoted at £6, 2/6. Scotch Steel-makers are very busy. In the North trade has been very busy, except in Rails: £3, 17/6 may be taken as the top figure for Ordinary Rails. Plates are firm at £6, 17/6. At Sheffield Railway Material, chiefly for India and the Argentine Republic, is still in brisk request.—*Economist, February 25.*

**TIN PLATES—London.**—There is practically no change in this market during the week, buyers showing very little inclination to place orders except on their own terms, and makers being unwilling to bind themselves with fresh contracts, which may be more unprofitable than working for stock. We quote, as last week, Ordinary IC Cokes, f.o.b. Liverpool, 15/ @ box. **Liverpool.**—The Tin Plate market has been rather quiet here throughout the week, and it is evident that with the falling off in the demand there can be no improvement in prices. In Siemens Steel Plates, with Coke Tinning, there has been a little doing, at prices varying from 14/6 to 15/ IC. Coke Tin and Steel Cokes Wasters are easier again at 13/6 @ 13/9. In the other departments of the Tin-Plate trade, such as Charcoals and Best Charcoals, business of necessity is not so very brisk, as the high price of Tin has affected this branch almost more than any other. Only a very limited number of the usual specifications have been received of late. There would, however, be much more doing in these if makers only accepted all the orders offered them at buyers' limits; but this was an impossibility in the face of such a strong Tin market. Prices for Ordinary Charcoals are 15/6 @ 16/ IC Wales, 16/6 @ 17/6 for the next grade of Charcoals, and 18/ @ 20/ IC for Best Charcoals. In the cheaper sorts of Ternes there has been a little more doing, but the demand for the better qualities is but small. Prices vary from 24/ to 27/6 Wales, and Wasters from 22/ to 23/6. The expectation is still strong that Tin will drop, hence the restricted business in Tin Plates.—*Ironmonger, February 25.*

## CHILI.

**VALPARAISO, January 5, 1888.—Copper.**—The year closed at \$32.10 @ quintal, with 30/ freight and 27d. exchange, since when there has been a rise to \$32.30, while exchange has declined to 25½d., which equals £81. 5/3. Total sales made, 20,340 quintals. **Nitrate.**—Very little has been done and at lower prices. The quotation for 95% is \$2.55, equal to 7/8½d. @ cwt. at 25/ freight. There were sold altogether 168,000 quintals. The export in December amounted to 87,000 tons to Europe and 5000 to United States. The total export in 1887 has been 15,244,721 quintals, of which 13,576,118

were for Europe and the balance to the United States. There were still loading January 1 35,000 tons for Europe and 12,000 for the United States. The charters for the fortnight sum up 11,300 tons for Europe and 6400 for the United States. **Coal firm.** We quote Newcastle, December shipment, 32/6; Orell, 31/, and Australian, 25/. **Exchange, 90 days' sight on London, has been selling at 25½d.—Weber & Co.**

## EAST INDIES.

**MANILA, February 27, 1888.—Hemp.**—We quote \$8.50 @ picul, against \$7.50 in 1887, being cost and freight @ ton £30, 12/6, against £27, 19/ last week. Cleared for the United States since January 1, 19,000 bales, against 43,000 last year; loading, 7100, against 16,000; cleared for England since January 1, 38,000, against 27,000; loading, 18,000, against 17,000; cleared to all other ports, 7000, against 6000. Receipts since January 1, 82,000, against 68,000 last year and 60,000 in 1886; freight for mixed cargo Hemp, \$5. **Exchange, six months' sight, 3/8½d.—Ker & Co., per cable to Chas. Nordhaus.**

**SINGAPORE, March 1, 1888.—Tin.**—The February export to the United States has been—From Singapore and Penang, 250 tons, against 250 in 1887; to England, 2500, against none. Since the 1st of January it was respectively 650 against 800 and 6000 against 1800.—*Gilfillan, Wood & Co. to Charles Nordhaus, New York, per cable.*

## GERMANY.

**HAMBURG, February 25, 1888.—Iron.**—The general tendency in the Iron market has been toward further improvement under the stimulus of a good demand, prospects for the spring trade being encouraging, the more so, as the political outlook begins to cause less apprehension. The inquiry for Pig Iron is as lively as ever. Spiegel is readily taken at the enhanced figure of 58 marks. For export more of it is being taken, the other day 10,000 tons in a single lot; for domestic use it might be livelier. The business in Forge Pig Iron is very steady, several contracts have been made all the way to August 1. There are no stocks. The present price is 53. Foundry Pig has undergone no change; both Thomas and Bessemer are very much wanted and firmly sustained, with a prospect of an advance in Bessemer. Luxembourg Forge is quoted at 37 @ 38 marks, and Merchant Iron remains in good position. Considering the season works are doing tolerably well, but there is a complaint that prices do not improve fast enough in proportion to the advance in raw material. Specifications are coming in slowly. Prices are so much depressed abroad that a profitable export trade cannot be thought of. Consumers subscribe without a murmur to syndicate figures. The demand for Boiler Plates has been of such a pressing nature that up to six weeks' time for delivery are asked on new contracts; this is a thing which has not happened for nine years past. The late general meeting of the Sheet-Iron manufacturers has fixed prices in such a manner that there is a due proportion now between all sorts of Sheet and Pig Iron, the price for Boiler plates having been raised 5 marks @ ton. In spite of the unfavorable season makers of Thin Sheets are satisfactorily engaged. There has been no change in the Wire branch; the export demand for Wire Rods might be more active. Dullness prevails in the railroad material branch. On the other hand, foundries and machine shops are more satisfactorily booked latterly. We quote Merchant Iron, 130 marks; Hoops 140; Bessemer Steel Billets, 135; Boiler Plates, 165; Bessemer Steel Sheets, 156; Wire Rods, 115 @ 116, and Wire Nails, 165. **Metals.—Lead.**—Continues tending upward, Copper is weaker and Spelter firm. We quote German Lead, 15 @ 16; Lake Copper, 78; Spelter, 18 @ 21.—*Borsenhalle.*

## SPAIN.

**BILBAO, February 11, 1888.—Iron Ore.**—This has been quite a dull week, and beyond a few single cargoes nothing has transpired. We quote as heretofore, Companil, 7/9 @ 8/, and Rubios, 6/9 @ 7/3. Export has been lively, summing up as it does 36,895 tons. Total shipments to date, 445,642 tons, against 446,711 last year. **Pig Iron.**—Only 461 tons went abroad during the week, and coastwise 1339.—*Bilbao Marítimo y Comercial.*

## FRANCE.

**PARIS, February 25, 1888.—Metals.**—Greater activity has been noticeable during the week in this market, Copper and Tin advancing, Lead declining and Spelter keeping steady. We quote as follows, in francs @ 100 kg.: Copper, Chili Bars, 195 @ 200; Ingots and Slabs, 195; Best Selected, 200, and pure Corocoro Ore, 185; Tin, Banca, 445; Billiton, 442.50; Straits, 440, and English, 410; Lead, 37 @ 38, and Spelter, 53 @ 54. **Iron.**—In this city beams are now selling readily at 13.50 francs, and Merchant Iron at 14.50. Makers and dealers now work harmoniously together. Public works have been interrupted by the severe frost, but have now been resumed

at St. Lazare, at the Exchange and at the Exhibition buildings, at all of which great activity prevails. We are informed from Charleville, in the Ardennes, that the revival in the Iron demand continues unabated. This relates particularly to the foundries, to hardware factories and to Structural Iron concerns, whereas the Nail works might be busier. Rolling mills are doing well and so do the blast furnaces of the Longwy basin, whose product sells with great ease. In the Haute Marne prices are kept up without difficulty at 14 francs for Coke Merchant. Machine Mixed is firmer and on the eve of being raised still further. Iron Nails, as well as Wire Nails, gradually improve. A new price list is to be issued. Chains are also recovering in value. In Southern France the rise in Iron at the North has not been fully responded to so far, but it will not last long, and that portion of our country will chime in since the demand is on the increase. This relates particularly to Iron Wire, galvanized especially, for vineyards.—*Moniteur des Intérêts Matériels.*

## BELGIUM.

**BRUSSELS, February 25, 1888.—Iron.**—Advices from the Belgian Iron regions are favorable this week. There has been an active demand for finished, leading to large transactions. Indeed, orders have been flocking in at such a rate that the price has been raised without difficulty to 12 francs @ 100 kg. but Structural Ironworks have so far not received the full quota of commands. The fact is that at length the disproportion in price between Pig Iron and finished gets to be amended, and the rolling mills now seem to enter upon a period which will locate them a better margin of profit. On February 1st there were, out of the 50 blast furnaces in Belgium, 31 blown in and 19 blown out. On January 1st the number in operation was 29, and extinct 21. During the latter half of 1887 Belgium turned out 385,839 tons of Pig Iron, against 345,592 during the corresponding period of 1886. The total production last year has been 754,481 tons, against 697,110 the previous year, showing an increase of 57,371 tons.—*Moniteur Industriel.*

## AUSTRIA.

**VIENNA, February 21, 1888.—Iron.**—There has been slackening demand for Iron during the week owing to the exceptionally severe weather and heavy snowfalls throughout the country, by which transportation has been greatly impeded. Although this is nothing but seasonal, still it delays somewhat the advent of the spring campaign. The tendency is nevertheless not an unfavorable one, since after last year's abundant crops the country population has got the means of replenishing its stock of tools and implements. So that the general impression is in favor of a good spring trade, although there may be some delay in its setting in. Considering the bad weather, Pig Iron has done tolerably well, and remains as firm as ever. The sale of Merchant has been quieter. Sheets have been rather active and well sustained. We quote at the close Pig Iron, florins @ ton: 38 @ 48; Merchant, 105 @ 120; Sheets, 150 @ 175; do. Galvanized, 25 @ 315, and Beams, 115 @ 150. **Metals.**—A satisfactory trade has been done at the following quotations @ 100 kg.: Copper, 105; Lead, 22; Spelter, 29; Tin, 209 @ 210; Antimony, 55. Quicksilver, 305.—*Handels' Journal.*

The relative military advantages in point of numbers and position, of Russia, Austria and Germany, in case war should come, are carefully considered by a Paris correspondent and the conclusion reached that Russia's large numerical superiority is more than offset by the difficulties of transportation which she encounters on the frontier or contrasted with her antagonists. The writer says: "The Russians have on or near the frontier a total of 240 battalions, 216 squadrons and 101 batteries, or in round numbers 182,000 men, 41,000 horses, and 438 guns; the united Austrian and German armies, 165 battalions, 144 squadrons, and 95 batteries, or 129,000 men, 30,000 horses, and 416 pieces of artillery; wherefore, the Russians have a numerical superiority of 75 battalions, 72 squadrons, and 6 batteries—that is of 53,000 men, 11,000 horses and 22 cannon." Most of these are from 200 to 300 miles from the frontier. "On the other side of the border the situation is infinitely more favorable; in Prussia, Posen and Siberia every garrisoned town is on a railroad line, and in Galicia, with the exception of two towns, without any strategic importance, prompt and easy communication is assured."



# TRADE REPORT.

## British Iron and Metal Markets.

[Special Cable Dispatch to The Iron Age.]

LOONDON, WEDNESDAY, March 7, 1888.

There has been no change for the better in the condition of the Pig-Iron market. The demand for all descriptions has continued slow, and buyers still have more or less the advantage on prices. Scotch warrants have improved a trifle under the influence of purchasers to cover "short" sales; but there continues to be an increase in the stocks in store, and makers' brands have sold at 3d to 9d decline during the week. Middlesboro' Pig is in relatively better position and remains steady, though quiet. Bessemer barely holds its own in value and is in only moderate demand. There has been more business in Spiegeleisen, at steady prices.

Some brokers report more American inquiries for Old Iron Rails, but the actual business passing is of moderate volume.

The output of Steel products is still increasing in various quarters. There are, however, a good many inquiries about for both home trade and export account, and large sales are being made of ship and railroad materials, Billets, &c., at but little variation from the prices current a week ago. Rails have touched £3. 17/6 in most localities, and that price is now the general one. There has been no further change in prices of Billets, Slabs, Blooms or Rods. The Manufactured Iron trade has been devoid of new feature.

There is little chance now that any compact will be formed by the Tin-Plate makers. They seem to be no nearer an agreement than they were a fortnight ago. It is expected that several works will necessarily be closed owing to the loss in manufacture at the relative values of Plates and Pig Tin. The total stock at the various British shipping points is estimated at 194,000 boxes, against 218,000 boxes last month and 323,000 boxes a year ago. Trade has been slow the past week, and the market remains unsettled. Former prices are quoted, but said to be shaded more or less on actual business.

There have been various reports of alleged troubles within the Copper syndicate. Nothing definite comes to the surface as regards the nature of the difficulties, but the intimation is thrown out that some parties attempted to sell or did sell *sub rosa* contrary to understanding. Subsequent developments, however, indicate that the leaders still have good control and prices have steadily hardened. The visible supply is now 53,000 tons, against 45,700 tons a month ago and 59,000 tons last year. Messrs. James Lewis & Sons' circular notes, among sales of furnace material, 30 tons American Precipitate at 14/6, to arrive.

**Cleveland Pig.**—Prices have ruled steady, but the demand is rather slow. No. 1 Middlesboro', G. M. B., 34/; No. 3 do., 31/3 @ 31/6.

**Bessemer Pig.**—The market still rather dull and prices barely steady. West Coast brands, mixed numbers, 43/ @ 43/6, f.o.b.

**Scotch Pig.**—The demand has shown no improvement. Prices are still weak and generally lower.

No. 1 Coltness, f.o.b. Glasgow.	48.3
No. 1 Summerlee, " "	48.6
No. 1 Gartsherrie, " "	45.6
No. 1 Langloan, " "	46.6
No. 1 Carnbroe, " "	41.3
No. 1 Shotts, " at Leith.	46.6
No. 1 Gtengarnock, " Ardrossan.	44.9
No. 1 Dalmellington, " "	40.6
No. 1 Eglinton, " "	39.6

Steamer freights, Glasgow to New York, 5/; Liverpool to New York, 7/6.

**Spiegeleisen.**—Somewhat better sales have been made at steady prices. English 20 % quoted at 75/ f.o.b.

**Steel Rails.**—Less business the past week, but prices steadier at the decline. Standard sections quoted at £3. 17/6 f.o.b.

**Steel Blooms.**—Very little doing and prices nominal. We quote at 72/6 @ 75/ f.o.b., for 7 x 7.

**Steel Billets.**—There has been a brisk demand and prices are firmer. Bessemer, 2½ x 2½ inch, £3. 18/9, f.o.b. at works.

**Steel Slabs.**—Trade moderate in these but prices steady. Bessemer £3. 18/6, f.o.b. at works.

**Steel Wire Rods.**—The market quiet but prices steady. Mild Steel No. 6 quoted at £5. 18/6, f.o.b.

**Old Rails.**—Sales moderate, although more inquiry reported. Tees quoted at £3, and Double Heads £3. 2/6 @ 3/5, c.i.f., New York.

**Scrap Iron.**—Demand continues slow and prices nominal. Heavy Wrought at 47/6 @ 50/ f.o.b.

**Crop Ends.**—Sales light and prices unchanged. Bessemer quoted £2. 5/ @ £2. 7/6, f.o.b.

**Tin Plate.**—The market continues dull and prices are weak and nominal. We quote, f.o.b. Liverpool:

IC Charcoal, Allaway grade	16/ @ 16/6
IC Bessemer steel, Coke finish	14/3 @ 14/6
IC Siemens	14/6 @ 14/9
IC Coke, B. V. grade	14/3 @ 14/6
Charcoal, Terne, Dean grade	13/6 @ 13/9

**Manufactured Iron.**—There is a fair trade generally at steady prices. We quote, f.o.b. Liverpool:

Staff. Ord. Marked Bars	7 10 0 @ 5 5 0
Common "	5 2 6 @ 5 5 0
" Hi's sheet, singles	6 15 0 @ 6 17 6
Welsh Bars (at Wales)	4 15 0 @ 4 17 6

**Tin.**—Steady market and a fair trade passing. Straits closed at £166 @ £166. 5/ spot, and £140 @ £142, three months' futures.

**Copper.**—The market strong with increased speculative purchases. Chili Bars closed at £81. 10/ @ £81. 15/. Best Selected, £80.

**Lead.**—Prices have ruled steady with the trade fair. Soft Spanish, £14. 17/6 at the close.

**Spelter.**—The market firm, but less active. Silesian, ordinary, £19. 5/ @ £19. 10/ at the close.

## Financial.

OFFICE OF THE IRON AGE,  
WEDNESDAY EVENING, March 7, 1888.

General trade shows some falling off, for which ready explanation may be found in the tariff discussion and the questions before Congress, which have an unsettling tendency. But to aggravate the situation news comes from the West respecting the attitude of the Brotherhood of Locomotive Engineers, who for the moment menace the entire country with a suspension of

railway transportation in order to compel a certain railway corporation to employ them on terms such as they may see fit to determine. But judging from the present temper of the markets the conviction is general that they will hardly resort to so desperate a shift, especially in the face of the decision just rendered by Judge Brady, of the Supreme Court of this State, in the case of Hartt vs Gill, and others, on an appeal from Judge Barrett, to the effect that "sympathetic strikes" are necessarily conspiracies. On the other hand, the business situation is relieved by the action of the Senate in ordering a favorable report upon the House bill confirming the authority of the Treasury to purchase bonds. The Democratic majority of the Ways and Means Committee on Tuesday submitted to the full committee the internal revenue bill and a proposition to consolidate in one measure the revenue and tariff bills was carried, thus making an aggregate contemplated reduction of revenue of nearly \$80,000,000. The agreement of the trunk lines to prevent rate cutting east of Chicago had a quieting effect. Reduced prices are announced for Lehigh and free-burning coals, promising renewed activity.

The Stock Exchange markets were unsettled and generally lower. On Thursday the House's passage of the surplus resolution imparted a better feeling. On Friday there was a weaker feeling, caused by disquieting reports respecting the Western strike and lower prices in London. On Saturday the decline continued, owing to free sales, and the same general features prevailed the day following. On Tuesday stocks were less active, but firmer. To-day the tone was more cheerful, Burlington and Quincy advancing to 125½, together with other leading stocks. The principal sales were in Reading, St. Paul and Lackawanna.

United States bonds closed as follows:

U. S. 4½s. 1891, coupon	106¾ @ 106¾
U. S. 4s. 1907, coupon	125¾ @ 125¾
U. S. Currency 6s. 1895	120 @ 120
U. S. Currency 6s. 1896	122 @ 123¼
U. S. Currency 6s. 1897	124 @ 124
U. S. Currency 6s. 1898	127 @ 127
U. S. Currency 6s. 1899	129¼ @ 129¼

The bank statement was unfavorable, as there was reason to expect. In surplus reserve there was a loss of \$2,455,725; but that item still remains at \$12,744,700, or \$3,656,650 more than a year ago. This continued reduction of reserve is due almost entirely to the steady absorption of funds by the Government, the influx of currency having been without interruption. In specie there was a loss of \$1,701,400 and in legal tenders a loss of \$1,483,800, while deposits showed a contraction of \$2,917,900. In loans there was a moderate increase of \$819,700. The money market has indicated a slight advance in rates, the business in time loans being restricted almost wholly to trust companies and institutions other than the city banks, whose first duty is to their customers. Rates are 4½ % 60 @ 90 days, and 4½ @ 5 %, from four to six months, on good collateral. In Boston few banks go below 5½ % for outside paper. In Chicago 6 and 7 % are the ordinary figures. In London money was active. The Bank of England rate remains 2½ %. The United States debt statement shows that the reduction of the public debt during the month of February amounted to \$7,756,366.67. Total cash in the Treasury, \$572,390,989.34. For the present the Treasury officials regard the situation as free from disturbing influences, and the reserve power to anticipate \$50,000,000 of interest, which will be freely exercised if required, postpones any danger for several months.

The clearings of 36 cities for the week indicate a decrease of 17.4 %, compared with the same time in 1887. Outside of New York the clearings showed a decrease of 9.5 %. St. Louis reported a falling off of ½ %; Chicago, 7.6; Boston, 11.3; Cleve-

land, 18.6; Louisville, 19.9; New York, 20.3; Cincinnati, 20.8; Philadelphia, 25.5, and Wichita, 58.4 %. San Francisco reported a gain of 10.4 and New Orleans 41.4 %. As above indicated, the volume of general trade was moderate, although in dry goods the demand at jobbing hands was improved, with all interior markets, Western and Southern included, furnishing a liberal quota of orders. In cotton there was a Waterloo for the bulls under a sudden break in values. The option sales amounted to 441,300 bales, the largest on record for a single day. Jobbing houses in the grocery trade had the usual amount of business at this season. Coffee is unsettled. Sugars are apparently in a strong position. Breadstuffs are stronger. Spot wheat was higher. Corn made a sharp advance. Provisions are stronger in expectation of a general tie-up west of Chicago.

The imports of merchandise at this port for the week were unusually heavy, amounting to \$12,059,000, of which about \$3,500,000 represents dry goods. Since January 1 the total is \$88,961,000, against \$81,649,000 for the same time last year and \$76,106,000 in 1886. The exports were \$6,069,000, making the total since January 1 \$53,811,691, as compared with \$52,627,000 last year.

Superintendent Paine shows that the total amount of resources of the savings banks of the State on the morning of January 1, 1888, was \$590,458,751; January 1, 1887, \$568,286,867, showing a net increase for the year of \$22,171,884.

Ten shares of the stock of the Chemical Bank were sold on the Stock Exchange at \$3600 a share, without the bi-monthly dividend of 25 %. For a long time the dividends have been at the rate of 15 % bi-monthly with an additional dividend of 10 %, making the dividend 100 % per annum.

Mr. James Henderson, of Birmingham, Ala., writes us as follows, under date of the 3d inst.: "I started the first heat of steel in my furnace on Monday, using one chamber, as, in consequence of an explosion of gas, the brick became damaged, so that I had to keep the hearth stationary. I used Mary Pratt white iron and Red Mountain fossil ore for a pig and ore heat; the lining was fluorspar and dolomite, which was very firm and hard under any heat of the furnace, yet it melted out soon after the iron was melted. We charged the ore at a few minutes' intervals, and finally, as the metal got below level of tap-hole, it was tapped sooner than we wanted to. The steel was of superior tool quality, and was analyzed by Alfred F. Brainerd, as follows:

	Per cent.
Combined carbon.....	0.752
Silicon.....	0.00933
Phosphorus.....	0.05134

Here is steel suitable for tools made in the open-hearth by partial decarbonization of phosphoric pig iron. We are calcining the lime before use, and expect to use it early next week. We shall soon put up a cupola for this purpose. The phosphorus is but half that usual in steel made in Pittsburgh, and is exceptionally low for steel made from phosphoric iron in the presence of 0.75 of carbon. I expect to get in regular work after erecting a calcining cupola."

The Britton Metal Leveling Company, Cleveland, Ohio, are in receipt of a cable order for two Britton leveling machines to go to England. They also have an order for a machine from P. H. Laufman & Co., of Apollo, Pa.

Rawhide pinions are used by the Pratt & Whitney Company, of Hartford, Conn., on their planers.

## New York Market.

**American Pig.**—The current week has been very uneventful, sales being of a hand-to-mouth character, with prices practically unchanged. Choice No. 1 grades of Foundry Iron remain scarce, and there has been some talk of importing selected No. 1 English Hematite Pig to meet urgent requirements. From the South no special changes are reported, and sales have been on a moderate scale. We quote good to choice No. 1 Foundry, \$20.50 @ \$21.50; No. 2 Foundry, \$19 @ \$20; Cinder Mixture, \$18 @ \$18.50, and Gray Forge, according to quality, \$16 @ \$16.75.

**Spiegeleisen and Ferromanganese.**—Nothing of any consequence is being done in Spiegeleisen, the only inquiry being one by a Western mill for spot lots to cover immediate requirements through the failure in the arrival of other lots contracted for. We quote, nominally, \$26.50 @ \$27. In Ferromanganese there has been considerable activity in small sales, due to the fact that the trouble at the Edgar Thomson Works has led to the closing down of their furnace, so that contracts entered into by them with consumers had to be either covered by direct purchase or by buying on the part of consumers themselves. We quote \$51.50 @ \$52 for 80 %.

**Scotch Pig.**—The market is dull, the only feature being a slight difference in freights. We quote \$20.75 @ \$21 for Coltness and Summerlee; \$19 @ \$19.50 for Dalmellington; \$19 for Eglinton, and \$19.50 @ \$19.75 for Clyde.

**Iron Ore.**—Negotiations are pending for a lot of 10,000 tons for an Eastern mill. Importers quote from 9¢ to 11¢ a unit, according to quality, 10¢ being named as the price for 60 % Bessemer Ore.

**Bar Iron.**—We quote carload lots on dock, 1.75¢ @ 1.80¢ for Common; 1.80¢ @ 1.90¢ for Medium, and 1.90¢ @ 2¢ for Refined, with half extras.

**Structural Iron.**—We quote Bridge Plates at 2.10¢ @ 2.20¢; Angles, 2.25¢ @ 2.40¢, and Tees 2.75¢ @ 2.90¢ in round lots on dock, and Beams and Channels at 3.3¢.

**Plates.**—Plates are weak. We quote Iron Tank, 2.1¢ @ 2.25¢; Shell, 2.4¢ @ 2.5¢; and Steel Plates, 2.4¢ @ 2.7¢ for Tank, 2.75¢ @ 2.95¢ for Shell, 3¢ @ 3.25¢ for Flange, and 3½¢ @ 4½¢ for Fire-Box. Foreign Steel Plates are a little firmer at 2½¢ for Flange.

**Steel Rails.**—Eastern mills report sales aggregating about 10,000 tons, chiefly for Southern delivery. From the West comes a report of a sale of 35,000 tons by a Pennsylvania mill to the Minnesota and Northwest, an 8000-ton block to an Ohio road and rumors of large transactions elsewhere. It is reported that some very large amounts will be required by two Western roads, who are pushing for the Pacific Coast. One of these, the Atchison, Topeka and Santa Fé, has lately purchased 10,000 tons of foreign Rails, delivery at San Diego, Cal., and a 2500-ton block is also named as having been sold by foreign makers for the Pacific coast. We quote \$31.25 @ \$31.50 at Eastern mill.

**Billets.**—Abroad Billets are somewhat lower, some of the German works quoting as low as 67/, f.o.b., at mill. Sales of small lots are reported. We quote \$29.25 @ \$29.50.

**Wire Rods.**—In the aggregate there have been sales aggregating a few thousand tons, chiefly in small lots. Foreign Bessemer Rods have been sold as low as \$39.50. It is explained that these Rods cost more to draw down than the Basic Rods usually purchased by Wire mills, since they require annealing in drawing down to 12 or 13.

**Old Rails.**—Sales are reported of 1000 tons of Doubles for the West and 1000 tons of Tees at Jersey City, besides a number of smaller sales. Buyers state that Tees have been offered to them at \$21, and that bids have been asked for Doubles at \$21.50.

**Railroad Fastenings.**—Quite a number of large orders for Spikes have been placed lately at the range of 2.15¢ to 2.25¢, with Angle Bars remaining at 1.85¢ @ 1.9¢.

## Philadelphia.

Office of The Iron Age, 220 South Fourth St., PHILADELPHIA, PA., March 6, 1888.

**Pig Iron.**—There is very little change to note in this department. The supply of good Iron is comparatively small, but the demand is equally limited, so that one offsets the other. New brands and "off grade" Irons are offered somewhat freely, and, as regards this class of material, prices are weaker. Considering the large consumption of Iron, it is surprising how little buying there is, but, in some way, consumers manage to get through. Stocks must be at an unusually low point, but the belief in lower prices is so strong that sales in quantity are hardly thought of at present. Furnaces are carrying very little stock, however, so that there is no great pressure to sell, although orders for forward delivery (if offered) would be readily accepted at current rates. In the absence of such demand the disposition is to accept orders as offered from time to time and at as near quoted rates as possible. The volume of business of this kind in the aggregate is quite considerable, and it is satisfactory as far as it goes, but the trouble is in its uncertainty. It may continue or it may fall off, so that the future with this kind of business is all guesswork. Prices have been well maintained, considering the dullness, and for early deliveries about \$21, at tide, can be realized for good brands of No. 1 Foundry; some get \$21.50 for special brands, while new brands and those of less repute can be had at \$20 @ \$20.50. No. 2 Foundry seems to command about \$19, and Gray Forge, \$17 @ \$17.50. There is a good deal of Iron for sale at \$16 @ \$16.50, but the quality is not considered desirable, hence it is almost impossible to get a bid, even at the low figures mentioned. Good Irons are wanted, and, as the supply is somewhat limited, there is not much trouble about prices, except with outside brands and those that are a little "off" in quality.

**Foreign Iron.**—No sales reported, although prices could be shaded a little if there was any probability of its leading to business. Asking prices about \$20 for Bessemer, c.i.f., duty paid, and \$27 @ \$27.50 for 20 % Spiegel.

**Blooms.**—Nothing doing in Foreign, but a fair movement in Domestic. Asking prices about as follows: Foreign, \$30 @ \$31 for Nail Slabs; \$31.50 @ \$32.50 for 4 x 4 Billets, and \$35 @ \$39 for Siemens-Martin, price according to analysis, &c. Domestic Blooms: Steel, from \$30 to \$35, f.o.b. cars at mill, according to analysis; Charcoal Blooms, \$53 @ \$54; Run-out Anthracite, \$45 @ \$46; Scrap Blooms, \$38 @ \$39 @ "bloom" ton.

**Muck Bars.**—The market is very quiet, and prices seem to be gradually weakening. Sales are reported at \$30 at mill, but there are others willing to sell at \$29.50, with very little demand. Prices vary from \$29 to \$30 at mill, according to quality, location, &c.

**Bar Iron.**—There is a fair demand for specialties, but ordinary Merchant Bars are very dull. Prices of the last named have dropped off again, and for anything like a good-sized order it is very hard to get 1.9¢, and in some cases lower figures have



been named. The mills are not able to run full; some have enough trade to keep them going, but others are not more than half or two-thirds full, and that can only be done by cutting prices. The Skelp trade seems to have fallen away entirely, and we hear of no demand whatever for Grooved and only a moderate inquiry for Sheared. Nominally prices are from 1.9¢ to 1.95¢ for Best Refined Bars and for Grooved Skelp, and 2.1¢ @ 2.2¢ for Sheared, but on large orders it would not be difficult to obtain concessions.

**Plate and Tank Iron.**—There is not much business offering at present, although some of the mills still have sufficient to enable them to run pretty full. The general report, however, is of extreme dullness and gradually weakening prices, so that even those who are running full have very little margin to work on. But the season is at hand when an increasing demand is usually experienced, and it is hoped that this year will not be an exception. Prices are nominally as quoted below (but can be shaded in good sized orders), viz.: Ordinary Plate, 2.05¢ @ 2.10¢; Tank, 2.10¢ @ 2.15¢; Shell, 2.4¢ @ 2.5¢; Flange, 3.5¢; Fire-Box, 4¢; Steel Plates, Tank and Ship Plate, 2.4¢ @ 2.5¢; Shell, 2.8¢; Flange, 3¢ @ 3½¢; Fire-Box, 3½¢ @ 4½¢. Since writing the above interviews have been had with several leading concerns, with the result of finding a somewhat improved demand, but at extremely low prices. A 1000 ton lot of Grooved Skelp was taken, and about 2000 tons of Steel Axles, which will probably be supplemented by a similar order for Bars, as contracts have been given out by the Pennsylvania Company for 3000 more cars. Prices are utterly demoralized, however, and manufacturers consider their position worse than it has been for years. Officers of one of the best managed and best equipped mills in Eastern Pennsylvania have been carefully investigating their position, with the result of finding every item of cost is higher in proportion than ever before, while the selling price is very much lower. Pig is \$1 higher, labor and fuel and freights are all higher, making such a difference that a leveling-up is inevitable. Prices do not seem like advancing, so that cost must be reduced or the mills be closed until they can be operated without loss. Quotations have been so low in some recent transactions that we forbear naming them in the hope that they may prove to be exceptional.

**Structural Iron.**—A tolerably large business has been done during the past week or two, and leading mills are running pretty full of work. Prices are weak, however, and in sympathy with other departments are lower on good-sized orders, with quotations about as follows: 2.10¢ @ 2.20¢ for Bridge Plate; 2.15¢ @ 2.25¢ for Angles; 2.7¢ @ 2.8¢ for Tees, and 3.3¢ for Beams and Channels, Iron or Steel.

**Sheet Iron.**—The demand is chiefly for small lots, although bids are in from dealers for their summer trade, but at figures not yet accepted. Small lots of the best makes command about as follows:

Best Refined, Nos. 26, 27 and 28.....	3½¢
Best Refined, Nos. 18 to 25.....	3¼¢
Common, 1¢ less than the above.	
Best Bloom Sheets, Nos. 36 to 28.....	4½¢ @ 4¾¢
Best Bloom Sheets, Nos. 22 to 25.....	4 @ 4¼¢
Best Bloom Sheets, Nos. 16 to 21.....	3¾¢ @ 3½¢
Blue Annealed.....	2½ @ 3
Best Bloom, Galvanized, discount.....	.60
Common, discount.....	.65

**Steel Rails.**—There is a moderate demand for Rails, but nothing urgent. Manufacturers hold prices quite steady, however, at \$31.50 @ \$32 at mill, and sales are all on that basis. Inquiries are somewhat numerous, but there is a disposition to go slowly while the tariff question is in abeyance.

**Old Rails.**—The market is dull and decidedly weaker. The offerings are more numerous, and holders would be willing to accept \$21.50 @ \$22 for moderate quantities, but buyers talk only about \$20.50 to \$21, and even then are not very anxious to get them.

**Scrap Iron.**—Sympathizes in some measure with the general market, and to sell large lots prices would have to be shaded. Asking prices about as follows: \$20.50 @ \$21 asked for No. 1, or \$21 @ \$21.50 for carload lots, or for choice \$22 @ \$23; No. 2 do., \$14 @ \$15; Turnings, \$15 @ \$16; Old Steel Rails, \$20 @ \$21; Cast Scrap, \$16 @ \$17; do. Borings, \$11 @ \$12; Old Fish Plates, \$26 @ \$27. Old Car-Wheels are in demand at from \$18 to \$19, Philadelphia, or its equivalent.

**Wrought-Iron Pipe.**—A slight improvement is noticeable in this department, a number of small lots have been taken at fair prices, but figures on large lots continue weak, irregular and unremunerative. Discounts are quoted as follows for small lots: Black Butt-Welded, 50 %; on Galvanized do., 42½ %; on Black Lap-Welded, 62½ %; on Galvanized do., 50 %; Boiler Tubes, 57½ %.

**Nails.**—There are plenty of inquiries for spring delivery, but very little immediate trade. Price is quoted firm at from \$2.10 to \$2.15 for lots from store.

## Chicago.

Office of The Iron Age, 95 and 97 Washington St., Chicago, March 5, 1888.

**Pig Iron.**—The situation in Coke Iron has not improved, the decline in prices referred to last week being still in progress. A peculiarity of the situation is that quite a difference of opinion prevails among manufacturers of the same kind of Iron as to its value, some of them quoting prices \$1 a ton higher than others. The cheapest grades of Iron are still most in demand. A sale of 600 tons of Mill Iron, Lake Superior Coke, was made at \$16.50. In some respects the condition of the market is quite discouraging, as there are sellers who seem to be determined to take orders wherever it is possible to get them by cutting prices. This fact causes a number of buyers to hold off in the belief that they may be able to get still lower prices in a week or two. This will soon correct itself, as a number of furnaces will be unable to keep up such a contest, and they will blow out. The business in progress is hardly up to the average for this time of the year. Domestic manufacturers are now offering High Silicon Pig Iron in competition with imported Silicon Pig, but at much lower prices, at the same time guaranteeing equal quality. In Lake Superior Charcoal there is a moderate amount of business doing, the largest sale for the week being one of 1000 tons. Prices of this kind of Iron are quite firmly held. Quotations are as follows, for cash, f.o.b. Chicago: Lake Superior Charcoal, all numbers, \$21 @ \$22; Alabama Car-Wheel, \$26; Southern Charcoal Foundry, No. 1, \$20.50 @ \$21.50; Jackson County Softeners, No. 1, \$20 @ \$20.50; Hocking Valley, Soft Foundry, No. 1, \$19.50 @ \$20; American Scotch, \$20.50 @ \$21; Lake Superior Coke, all Ore, No. 1, \$19 @ \$20; No. 2, \$18.50 @ \$19; No. 3, \$17.50; Cinder Mixed, 50¢ less; Southern Coke, No. 2, \$18.50 @ \$19; No. 2½ and Open Bright, \$18 @ \$18.50; No. 3, \$17.75; No. 1 Mill, \$17.50; No. 2 Mill, \$16.50.

**Bar Iron.**—Business is dragging along without much change. Orders are generally small, but enough of them have been placed during the week to keep up at least a semblance of activity. Common Iron is still quoted on a basis of 1.60¢, half extras, at Mahoning Valley mills, while Guar-

anteed All Muck Bar is held at 1.90¢ @ 2¢, f.o.b. Chicago. Store prices continue to range from 1.90¢ to 2.20¢ according to quality and quantity.

**Structural Iron.**—The demand is not very brisk, but inquiry is reported for building work. Angles are still quoted at 2.60¢ and Tees at 3¢ from store; Beams and Channels, 3.80¢ from store; Universal Plates, 2.50¢ @ 2.60¢ from mill.

**Sheet Iron.**—No change is reported in the price of either Black or Galvanized Iron. The demand for Black Iron is very quiet, as usual at this season of the year. Galvanized Iron, however, is in very active demand, the month of February, which has just closed, having been a month of very much larger business than February of last year, which had been considered an unusually good month in every respect. Heavy inquiries are in hand for Galvanized Iron, and the prospects are excellent for continued good business. Carload lots of Black Sheet Iron are quoted at 3¢ @ 3.05¢, f.o.b. Chicago, for No. 27, which is quoted at 3.45¢ from store, with concessions to best buyers. Small lots of Galvanized sell at 60 % off for Juniata and 60 % and 5 % off for Charcoal, with the usual discounts for large lots.

**Plates.**—The demand from store has been very good, and prices are being firmly maintained as follows: Heavy Sheets, Nos. 10 to 14, 2.70¢; Tank Iron, 2.70¢; Tank Steel, 3¢; Shell Iron, 3¢; Shell Steel, 3½¢; Flange, 3¢; Fire-Box, 4.75¢. Boiler Tubes are quoted at 55 % @ 57½ % off, but the indications are favorable to an early improvement in price.

**Merchant Steel.**—A fair trade from store is in progress, but there is nothing new in prices, quotations continuing as follows: Bessemer Bars, 2.45¢; Tool Steel, 8½¢ @ 9½¢; Specials, 13¢ @ 25¢; Crucible Spring, 4.25¢; Open-Hearth Spring, 2.90¢; Open-Hearth Machinery, 2.75¢ @ 3¢; Crucible Sheet Steel, 7¢ @ 11¢.

**Steel Rails.**—No sales are reported for the past week. The dullness in this line of business has now continued for such a length of time that prospects are quite gloomy, notwithstanding the fact that a number of transactions which have been on the carpet may result in orders. The Western freight war, the railroad engineers' strike and a number of other influences are operating quite adversely upon the Steel Rail trade, and have considerably changed the aspect of affairs from those existing six weeks ago. Quotations continue as before at \$34 @ \$35 at mill for heavy sections.

**Old Rails and Wheels.**—The Old Rail transactions reported consist of a few small lots which have changed hands at \$21.50 @ \$21.75. Large lots could hardly bring this figure, although there are holders who ask more. Old Car-Wheels have been quiet, the nominal quotation continuing at \$21.

**Scrap.**—Business has been light, but the light demand occurs when stocks are small in almost every dealer's yard, and the outside supply is also short. Prices are therefore affected but little, and former selling quotations are continued as follows for carefully selected ½ ton of 2000 lb: Railroad Shop or No. 1 Forge, \$21; Track, \$19; No. 1 Mill Iron, \$16; Light Wrought, \$9.50 @ \$10.50; Machinery Cast, \$16 @ \$16.50; Stove Plate, \$12.50 @ \$13; Cast Borings, \$10; Wrought Turnings, \$12 @ \$12.50; Axle Turnings, \$14.25 @ \$14.50; Coil Steel, \$15; Leaf Steel, \$16 @ \$16.50; Locomotive Tires, \$17 @ \$17.50; Horseshoes, \$19.50; Axles, \$26 @ \$26.50. Dealers are offering \$13 @ \$14 for Mixed Country Scrap.

**General Hardware.**—The Chicago, Burlington and Quincy railroad strike has had no effect on the wholesale Hardware

trade of this city, which is exceedingly active. In fact, jobbers say they have more difficulty in getting goods than in getting orders. The volume of business is in excess of that of the corresponding time last year. The extraordinary demand for staple goods has tended to stiffen the views of manufacturers and dealers, and prices are firmer along the whole line. The only actual advance recorded in the past week is in Wire Nails, but other articles will follow suit in the near future if nothing untoward happens, such as a general strike among locomotive engineers, which is threatened and which would, of course, paralyze all trade for a time. Manufacturers' agents also report a better condition of business. Nuts and Bolts are now in good shape and prices are well maintained, but Files are a little slow in reaching uniformity in price, and there is a possibility that those who have advanced rates may be obliged to retrace their steps. Heavy Hardware is in excellent demand and some very large sales have recently been made. Collections are good in almost every line.

**Nails.**—The demand for Steel Cut Nails has been very brisk and prices are more firmly held by manufacturers. The cheapest sellers have slightly advanced their rates, and all are endeavoring to get specifications running from 25¢ to 30¢ above base on an average. Jobbers' quotations are \$2.05 for carload lots, on track at Chicago; \$2.10 for mixed carloads from store, and \$2.15 @ \$2.20 for small lots. The Wire Nail manufacturers have concluded to try the experiment of advancing prices, and some of the largest mills now name \$2.65, f.o.b. Chicago, as their bottom rate. Jobbers have advanced their prices also, and ask \$2.75 for carloads and \$2.85 for small lots. Although a few dealers have good stocks of Wire Nails, that is not the general condition of the trade, and manufacturers' agents are in receipt of numerous inquiries from anxious purchasers who desire to place orders at the old rates. Under the circumstances the local trade is disposed to maintain this advance.

**Barb Wire.**—The manufacturers are generally behind in filling their orders, the demand exceeding their expectations for this season. Most of them, if not all, are refusing to enter additional orders at the old rates, as they are looking for the establishment of higher prices before the expiration of the month. They are supported in this belief by the report that Eastern manufacturers have advanced their prices  $\frac{1}{2}$ ¢ @ 1 lb. Jobbers continue to quote Painted at 3.10¢ for carloads, 3.15¢ for mixed cars and 3.20¢ for small lots, with the usual  $\frac{1}{2}$ ¢ advance for Galvanized.

**Pig Lead.**—About 200 tons have been sold at 4.90¢, but both spot and future Lead are very scarce, and the market is strong, with an upward tendency.

Chamberlain, Wheeler & Co., of Columbus, Ohio, and 58 Dearborn street, Chicago, have issued a circular stating that they have been appointed agents for the sale of Pencost Pig Iron, which is specially high in silicon. The silicon analysis will be guaranteed in all cases. The use of high silicon Pig Iron in foundry practice is making radical changes, and a great deal is now being done by progressive Pig-Iron merchants to educate the consumers of Pig Iron to the advantages to be derived from it. An important paper on the subject, which was read before the British Iron and Steel Institute by Charles Wood, of the Tees Iron Works, Middlesboro', England, has been reprinted for general distribution by Chamberlain, Wheeler & Co., together with additional facts gathered from other foreign as well as American sources.

## Pittsburgh.

Office of *The Iron Age*, 77 Fourth avenue, Pittsburgh, Pa., March 6, 1888.

The general Iron and Steel situation does not improve; on the contrary, the outlook in some respects is not as encouraging as it was a week ago. One labor trouble is hardly adjusted before another makes its appearance, and tariff agitation adds to the uncertainty. There are but few who have any idea that the bill now pending in Congress will pass in anything like its present form, but it has its effect on business. The statements of Mr. Andrew Carnegie, in regard to Chicago supplanting Pittsburgh, as relates to the Steel trade, particularly Bessemer Steel, which he claims can be made there for a less cost than in Pittsburgh, have provoked a good deal of comment here, some of it not very favorable to Mr. Carnegie. While Chicago has a slight advantage over Pittsburgh in Lake Ores, being nearer the Ore mines, and the cost of transportation is less, Pittsburgh has a very decided advantage over Chicago in the matter of fuel. Mr. Carnegie says the Edgar Thomson Works will not be started up until the men accept the terms proposed by the firm, but the men appear to be about as stiff as their employers. The mill of the Carnegie firm at Homestead is in operation, and it is claimed that if necessary they can work up all the Rail orders at this mill, which was originally built for a Rail mill, and until within the past year was run chiefly on Rails, and it is said that with slight changes it can be started on Rails again. The men at the Homestead mill are under contract with the firm for a certain time, and cannot object to making Rails if the firm so order.

**Pig Iron.**—There has been but little change in the situation during the past week; the market continues in an exceedingly unsatisfactory and unsettled condition, and the prospect for an early improvement is not as encouraging as it might be. No furnace here or hereabouts, no matter what advantages it may have, can hold its own in the present condition of affairs, and unless there is a radical change soon those still in blast will have to blow out. Cost of production must be reduced or the price of Pig Iron advanced. Efforts are being made in both directions, but as yet with but little success. The price of Coke has been reduced, but railway transportation is still kept up higher than it ought to be, and as furnacemen are big patrons of the railroads, it is thought that the latter should without any hesitation stand their full proportion of the present depression and reduce rates accordingly. A good many idle cars are reported already, and the number will be largely increased unless there is a change soon for the better. Prices continue weak, and some of the sales during the week under review show a further decline. Bessemer is said to have been sold as low as \$17.75, four months, and good brands of neutral Gray Forge at \$16 @ \$16.25, cash. We quote as follows:

Neutral Gray Forge.....	\$16.25 @ \$16.75, 4 mos.
All Ore Mill.....	17.25 @ 17.50 "
White and Mottled.....	15.50 @ 15.75 "
No. 1 Foundry.....	18.25 @ 18.50 "
No. 2 Foundry.....	17.00 @ 17.50 "
Charcoal Foundry.....	22.00 @ 25.00 "
Cold Blast Charcoal.....	25.00 @ 30.00 "
Bessemer Iron.....	17.75 @ 18.00 "

**Muck Bar.**—Continues dull and prices have further declined. We now quote at \$27.50 @ \$28, cash. The failure of Graff, Bennett & Co. takes one of the largest buyers out of the market for the present, as both of their mills are stopped and will not be started up again until the affairs of the firm are settled, as they will probably be by the sheriff. In any event, the mills in question will no doubt stand idle for some time to come.

**Manufactured Iron.**—Trade in all kinds of Finished Iron continues light and unsatisfactory, for which various reasons are assigned, but there will no doubt be an improvement as the spring season becomes more advanced. While, as already noted, the outlook in some respects is discouraging, the country is in good condition, and there will no doubt be an improved demand within the next few weeks. Prices are weak, with a disposition to cut on desirable orders. We continue to quote Bars at 1.80¢ @ 1.85¢; Plates, 2.40¢ @ 2.45¢; No. 24 Sheet, 2.85¢ @ 2.90¢, all 60 days, 2 % off for cash.

**Nails.**—The Nail market is reported slow for the season, but it is hoped that there will soon be an increased demand. None of the factories here are running full, nor is it likely that they will this spring, judging from present indications. Prices remain unchanged at \$1.90, 60 days, 2 % off for cash, in carlots and upward. It is alleged that some of the Wheeling manufacturers are cutting on the price quoted, notwithstanding it is generally admitted that there is little margin for profit at \$1.90.

**Wrought-Iron Pipe.**—This important department of the Iron trade continues in an unsettled and unsatisfactory condition; but few if any of the mills here are working up to more than one-half of their capacity, and the general outlook is not as encouraging as it was at the same time last year. Unless new fields are opened up the requirements by natural gas companies will not be up to what they were in 1887, although development is being pushed forward with a good deal of vigor, and new territories are likely to be opened up at any time. Moreover, the older companies still have a good deal of Pipe to put down. Prices continue unsettled and unsatisfactory to makers, and until there is a considerably improved demand it is not likely that any attempt will be made by the association to regulate prices.

**Old Rails.**—The demand continues light and prices are easy, but, so far as we are advised, there have been no sales of American Tees under \$24, but some operators intimate that they will be sold below the price quoted before long.

**Billets, &c.**—Bessemer Steel Billets are easier, and we now quote \$29 @ \$29.50, although the mills are pretty well sold up. Nail Slabs, \$29; Domestic Rail Crops, \$18.50 @ \$18.75. Sale of American Steel Rods reported at \$43.

**Steel Rails.**—Heavy sections are still quoted at \$31.50 @ \$32, cash, free on cars in Pittsburgh. The Edgar Thomson Works still standing idle owing to hitch on the wage scale.

**Old Material.**—There is a fair business; prices remain unchanged: No. 1 Wrought Scrap, \$20, net; No. 1 Wrought Turnings, \$13; Car Axles, \$26; Cast Borings, \$12.50 @ \$13, gross; Cast Scrap, \$16.50 @ \$13; nothing doing in Old Wheels.

## Chattanooga.

Office of *The Iron Age*, Carter and Ninth Sts., Chattanooga, Tenn., March 5, 1888.

The influx of newcomers from the North and West under the auspices of the reduced rates that the railroad lines have made to prospectors has revived the drooping tone that the real estate operators seemed to be falling into, and they are looking forward to an accelerated movement in real estate. New sites for manufacturing centers are again coming before the public, and several auction sales of such properties have taken place, which have realized large profits to original investors. Merchants have now fairly embarked on their regular spring trade, and business with them is very brisk. Traffic on the



railroad lines has again become very heavy, and the depots are filled to overflowing with goods of all kinds, both going and coming. Under the influences of the reports that are coming from the North of the depression in Iron business, there has been a falling off in the interest that has been manifested by many in the location and construction of new blast furnace plants, and, no doubt but quite a number that were taking shape will be abandoned.

**Pig Iron.**—So far the condition of the Pig-Iron market does not fully sympathize with the reported dullness said to exist through the North, and we can note only a slight falling off in the tone of the market as well as prices. The fact is that such is getting to be the large consumption of this staple through the South that our Southern furnaces are far from being obliged to depend upon the North for sources of their outputs, and a number of them are encouraging the erection of foundries to whom they sell their output at bottom figures, which is turned into articles of commercial values and which are standard on any of the markets of the world. These operations are capable of being carried on to a much greater extent than what they now are, and parties are now South looking around for opportunities of embarking in such enterprises, arguing that the difference in the freights of the raw material is a sufficient profit to them. There have been some round lots of Pig sold within the past few days for monthly deliveries through the balance of the year, but it is difficult to get at the figures, although one sale of 500 tons of No. 2 Foundry at \$16, cash, can be noted; also another sale of 300 tons Open Bright at \$15.50, cash; these are f.o.b. prices.

**Miscellaneous.**—The East Tennessee system has issued a rate sheet on Pig Iron from Chattanooga, Hermitage, Anniston, Tecumseh, Columbia, Brierfield, Rockrun, Tenifer, Ironaton, Clifton and Round Mountain to 312 points through the North and West where Pig Iron is consumed; this is exclusive of the rates to the East, which go via Norfolk. These rates expire Aug. 31.

## Cleveland.

CLEVELAND, March 5, 1888.

**Iron Ore.**—Business, instead of improving, is worse than ever, and there is no indication as yet of any Ore sales in the near future. The rail orders do not seem to have made any perceptible inroads upon the Ore on dock along lower lake ports, and as long as any considerable quantity of Ore remains in stock there is little prospect of any business. It is now only a question of dividing the cut on new Ore—how much the producers, the vesselmen and the labor market will contribute toward the reduction. New Ore will probably be from 75¢ to \$1 cheaper than the old stock, Pig-Iron makers having already discounted this fall in prices. The Ore on dock is about 900,000 tons, of which about 200,000 remain unsold. This covers the lower lake ports entire.

**Manufactured Iron.**—Considerable business is reported in the Bar Iron line, heavy purchases being made by manufacturers of cars. A great many orders for cars are being received, and as each car consumes 2 tons of Bar Iron and 3 tons of Cast and Forged Iron, for wheels and axles, the mills are reasonably assured of a good season. Sheets are also a trifle stiffer, being held firmly at the mills on a basis of \$2.70 for No. 24. Shapes promise to do well, and there will be a considerable trade in I Beams and smaller grades of Channels.

**Pig Iron.**—Weak quotations and few sales characterize an already demoralized market. Iron is selling in the Mahoning and Shenango valleys for just about what

it will bring, without regard to cost. The best grades of Coke Iron, even those of standard makes, go at \$18 in the valley, which means \$18.85 here. What little business there is is confined to a little Scotch and some Mill Iron. Sales are small in amount, being for immediate consumption. The rolling mills are afraid of the market and decline to carry even small stocks of Pig. The railways centering in the valley are seriously considering a reduction in freight rates, and a cut in wages is only a question of a very few weeks.

**Nails.**—Cut Nails are being braced up by the Eastern combination, and Wheeling quotations are \$1.70 for Iron, and \$1.80 for Steel. Wire Nails are still plentiful and weak. The difficulty at the HP Nail Works here will, it is hoped, be amicably settled before long.

**Steel Rails.**—The Cleveland Rolling Mill Company have taken the order for 7000 tons (more or less) of 68 lb Rails to be used in double tracking the N. Y., P. and O. Railroad, from here to Youngstown, a distance of 73 miles. The price is \$33—corresponding with \$31.50 in Pittsburgh—and the delivery is to be made in August. The rumor that the Cleveland and Canton Railroad had placed 17,000 tons of Rails here is incorrect.

**Scrap.**—There is some little demand for Car-Wheels and Old American Rails, but at prices which are little inducement to holders. Old T's are scarce, and select Axles bring good money. No. 1 Wrought Scrap brings \$18.50.

## Cincinnati.

Office of The Iron Age, Fourth and Main Sts.,  
CINCINNATI, March 5, 1888.

**Pig Iron.**—The general opinion of local dealers in Pig Iron is that the market is extremely dull, and the inactivity is accompanied by a weaker feeling and lower prices. The further decline in prices has been assisted by the urgency of some producers to effect sales, and the breach once made has been widened by other furnaces, which, while not pressing sales, have been compelled to accept the lower prices or hold their product. Some furnaces have adopted this latter course, having already secured orders enough to place them beyond the immediate influence of the forces now at work. Many buyers, recognizing the fact that the course of the market is strongly in their favor, are disposed to hold off from purchasing as long as possible; others, however, are inclined to secure stock at the decline which has already taken place. The orders placed during the week have been small in amount in themselves, and yet, in the aggregate, the volume of business has been quite fair. One peculiar feature already noted is the cancellation of high-priced orders given to Southern furnaces, which, being so heavily oversold, have been unable up to live to contract, and yet these same furnaces are taking more orders at the lower prices current, and some contracts, with the consent of all concerned, are being carried over from one month to another. The sales which have been made here during the week are of various kinds and grades; Nos. 1 and 2 Mill, Gray Forge, Nos. 1 and 2 Foundry and Lake Superior Malleable have been mentioned. Toward the close of last week one lot of 17,000 tons No. 1 and No. 2 Southern Mill Iron was sold to Pipe works at Louisville, and report has it that the greater part of the order was secured by the Cincinnati agent of the Tennessee Coal and Iron Company, on a basis of about \$15.50 @ \$16 for No. 1 and \$15 @ \$15.50 for No. 2 Mill, but this information is only partly confirmed here. To-day another round amount is said to have been placed in the East through the influence of local operators,

and one or two other large amounts are in process of completion. These last reports are said to have imparted a tone of some confidence to sellers, who also bank upon light stocks, heavy consumption and reduced production. Quotations for cash, f.o.b. cars at Cincinnati, are as follows:

### Hot-Blast Foundry.

Ohio Southern Coke, No. 1.....	\$19.00 @	\$19.50
Ohio Southern Coke, No. 2.....	17.50 @	18.00
Ohio Southern Coke, No. 3.....	17.00 @	17.50
Ohio Soft Stone Coal, No. 1.....	19.00 @	19.50
Ohio Soft Stone Coal, No. 2.....	18.00 @	18.50
Mahoning and Shenango Valley.....	19.00 @	20.00
Hanging Rock Charcoal, No. 1.....	22.00 @	23.00
Hanging Rock Charcoal, No. 2.....	21.00 @	23.00
Tennessee and Alabama Charcoal, No. 1.....	19.50 @	20.00
Tennessee and Alabama Charcoal, No. 2.....	18.00 @	19.50

### Forge.

Strong Neutral Coke.....	16.50 @	17.00
Mottled Neutral Coke.....	15.00 @	15.25
Cold Short.....	15.50 @	16.00

### Car-Wheel and Malleable Irons.

Southern Car-Wheel.....	22.50 @	24.00
Hanging Rock, Cold Blast.....	24.00 @	25.00
Lake Superior Car-Wheel and Malleable.....	22.00 @	23.00

**Old Rails and Wheels.**—There has been a fair demand and a firm market for Old Wheels at \$20.50 @ \$21, but Old Rails have been slow and easy and nominally quotable at \$21.50 @ \$22 ½ ton.

**Nails.**—The demand is fair, but the market is well supplied and easy. Iron 10 @ 60d sell at \$2 @ \$2.10, and do. Steel at \$2 @ \$2.10 ½ keg, and other sizes at proportionate rates. Steel Wire Nails sell at \$2.90 @ \$3 ½ keg.

**Manufactured Iron.**—The market for Manufactured Bar and Sheet Iron is dull, and a weak tone prevails, with prices barely sustained. Bar and Sheet Iron—Common Bar Iron, 2¢; Charcoal Bar Iron, 3¢; Sheet Iron, boiled, Nos. 10 to 27, 2.50¢ @ 3.25¢; Sheet Iron, Charcoal, Nos. 15 to 25, 3 ½¢ @ 4 ½¢ ½ lb.

## Coal Market.

The spring opening prices for Anthracite Coal were fixed at a meeting of the six companies, held to-day, as follows: Free-Burning Broken, \$3.75; Egg, \$4; Stove and Chestnut, \$4.25—showing a heavy reduction—all f.o.b.

The Anthracite Coal market, after an interval of excessive dullness, is now in a condition of surfeit, so that producers are calling for a halt. Prices, too, are ranging on a lower basis, encouraging to consumers and inviting a more active trade, but affording little hope to miners, who still talk of higher wages. During the past week the total Anthracite production was 640,203 tons, a decrease of 14,000 tons compared with the previous week, the Wyoming region having dropped nearly 20,000 tons, to 481,869 tons, while the Schuylkill shows up 5000 tons more, and the Lehigh a trifling increase. Since January 1 the aggregate is 5,283,921, as compared with 5,400,994 for the corresponding period last year, showing that losses from the suspension of labor are fast being made good.

Bituminous Coal is quiet, there being little inquiry. Prices as fixed by the Seaboard Association are \$3.25, f.o.b. at South Amboy; \$2.60 at Philadelphia and Baltimore, the same as last season, but prices for Eastern shipment are yet to be arranged. European steamers outward bound are taking more Coal lately in lieu of cargo, on account of light freight offerings.

The miners' strike in the Schuylkill region is entirely over. The Reading Coal and Iron Company report 36 of their 44 collieries as actively working, and that several other breakers will resume shortly. All the collieries in the Schuylkill district operated by individuals are also reported working. In the Lehigh region, where the miners have been on a strike for six months, the men are gradually returning to work on the old basis, and Pardee & Co., Linderman & Skeer and others are now

employing a considerable force, and orders for Lehigh Coal are being received at the several agencies in this city. The Lehigh Coal Exchange made prices of Lump, \$4.50; Broken, \$4.20; Egg, Stove and Chestnut, \$4.10 per ton, f.o.b. at the loading ports. The Reading Coal and Iron Company made a further reduction of 25¢ for the domestic sizes, which are quoted, Broken, Egg and Chestnut, \$2.75 per ton at the mines, and Stove \$3.

The breaker of Glendower Colliery of the Reading Coal and Iron Company, near Minersville, was destroyed by fire on Sunday evening. The loss will aggregate between \$60,000 and \$75,000. Between 400 and 500 hands will be thrown idle for several months.

Suit has been entered against the Chicago and Northwestern Railroad Company for discriminating against the Coal operators of the Pittsburg and Hocking Valley districts, in the shipment of Coal to the Northwest, in favor of the operators of Illinois.

All the assemblies of the Knights of Labor in the Pennsylvania Anthracite region are preparing for a general conference with the design of fixing upon a general basis of wages applicable to all the Coal fields.

## Metal Market.

**Copper.**—The spell of monotony which up to within a week had taken hold of the London market latterly was broken with the beginning of the month, and from £79. 2/6 on March 2, and sales of 150 tons, Chili Bars advanced to £80. 12/6, with sales of 1400 tons, on Monday. Our own market opened on the 1st inst. at 16¢ for March; 16.20¢ for April and 16.30¢ for May, with sales of 325,000 lb. The next day, Friday, the market was steady, the turnover being 125,000 lb at 16¢ for March, 16.25¢ for April and 16.30¢ for May, the week winding up dull, though slightly higher, March bringing 16.05¢. On Monday our market responded in a more decisive manner to the London improvement, March selling at 16.10¢ @ 16.15¢; April, at 16.25¢ @ 16.30¢; May, at 16.40¢, and spot bringing 16.05¢ @ 16.10¢, sales summing up 750,000 lb. Yesterday Chili Bars advanced 12/6, to £81. 5/, with 575 tons as a turnover, the response being 10 points here with 150,000 lb sold, March closing at 16.20¢. With the large amount of Copper now under control of the syndicate on the other side it would be an easy matter to advance prices considerably on both sides of the Atlantic, but, as the syndicate is situated, it would be bad policy to do so, and thereby curtail consumption, on the one hand, still further, and stimulate production all the more where it has no control, on the other. Estimates are made that Chili, will, in any event, not produce over 35,000 tons this year. It seems to us too early to venture upon any such estimates as regards Copper production in a country in which the output is swayed by so many considerations as is the case in Chili. It was cabled from Madrid last week that the Spanish Government would introduce in the Cortes a bill granting fiscal advantages to the mining companies, at Huelva, as compensation for diminished profits resulting from the decree against open-air calcination. We have heard so often about the intended issuing of this decree for the past six months that we doubt it will ever be enforced, the surrounding population greatly depending for wages on that process, while there has never been much of a vegetation to be injured by the smoke, Huelva being a region at all times famous for the absence of anything green. While this is the case, it is asserted that in spite of the smoke it is a healthy locality. Rio Tinto shares rose 18 francs last week on the Paris Stock Ex-

change. It was telegraphed from Boston last week that over 10,000 shares Boston and Montana have been bought for Parisian account, principally in very small certificates. Between Copper and Copper shares the general situation of the metal gradually gets to be terribly mixed in Europe and here, and, of course, all the more sensitive in the event of anything unforeseen happening. This causes the legitimate traders and consumers to become more and more circumspect, and thus restricts the use of Copper to the strictly necessary in order to steer clear of pitfalls. The enormous decline in the value of coffee from 22 1/4¢ in June to 13 1/4¢ at present—chiefly through a 33 % falling off in consumption—stands as a warning example of the danger of artificial bolstering up of an article during these ultra speculative times. The latest official news from the Calumet and Hecla is that the February product, in spite of the short month, was 1830 tons of mineral, equivalent at 75 % Fine to 2,750,000 lb. The last official advices in regard to the fire are: "There has been no smoke or other indications of active fire for many days, and there is a lessened temperature at all points." All the advices of those who have personally visited the Copper manufacturers in the Naugatuck Valley lately agree that quite unanimously they are keeping out of the market now, and do not expect to come in at an early date. Some of them appear to be picking up occasional lots from time to time as urgent requirements call for such action, and it seems to be their policy to continue in this course for the future. Speculators, on the other hand, urge that, with very little cash Copper available and a strong short interest, it would be an easy matter for the syndicate to rush up the market here and then force the manufacturers to take larger lines at a concession, but still at a figure considerably above those now ruling. It is insisted by them that it is an idle threat to close down the mills when the profit of the manufacturers is so large. The market closes 16.35¢ @ 16.40¢ for spot, sales at 16.30¢ @ 16.35¢ for March, 16.50¢ for April, 16.60¢ for May and 16.50¢ for June, London cabling this morning at £81. 12/6 for Chili Bars and £80 for Best Selected.

**Tin.**—About 160 tons of Tin have been sold at the Metal Exchange during the week under review, chiefly May, from 31.35¢ down to 31.25¢, and back to 31.50¢, and April, from 33.35¢ up to 33.75¢. The market closes with spot, 36.80¢ bid, and 36.85¢ asked, March, 36.10¢ and 36.25¢ respectively; April, 33.80¢ and 34¢, and May, 31.45¢ and 31.55¢ respectively, London cabling £166 for spot, and £142 for futures. **Tin Plates.**—The condition of the Tin-Plate market has not appreciably altered since our last report. Trade in Bright Plates is large, and inquiries for Ternes are increasing. In a general way the new tariff bill is having an unsettling effect, for buyers are not so eager to purchase where there is any chance of prices declining through the abolition of the present duty. The disturbance from this cause, however, is as yet hardly noticeable, for even if the bill were passed it would not affect prices for some time to come. We repeat last week's quotations for large lots in New York as follows: Siemens-Martin Steel, Charcoal finish, \$5.10 @ \$5.30, ditto, Coke finish, \$4.90 @ \$5; Ternes, \$4.20 @ \$4.30; Bessemer Coke, \$4.70 @ \$4.75, and Wasters, \$4.62 1/2.

**Lead.**—What business is being done is almost entirely of a speculative character, consumers having remained aloof. It is asserted that 5.25¢ has been paid by a consumer for a 50-ton lot, but this was not the usual cash transaction, and leading merchants do not usually sell the party in question. The entire speculative move-

ment is regarded with extreme distrust by the whole legitimate trade. A good deal of ado has been made over the so-called European syndicate, which turns out to be a bull pool among a few of the operators in London, who are utterly unable to swing the Lead market on that side. Private advices from different sources on Tuesday cabled to different parties here quoted Lead in London from £14. 15/ to £14. 17/6, and both agreed in naming the market weak. On the Exchange quotations are made for Lead into November and December, at prices increasing for each monthly option, with the evident intention of impressing Lead producers with the wisdom of the policy of holding off, and at the same time of creating among consumers the idea that now is the time to buy. We quote for Spot Lead 5.17 1/2¢ @ 5.20¢. An advance of 1/4¢ per lb was made in this city March 1 on both Lead Pipe and Sheet Lead, the revised prices being 7 1/4¢ and 8 1/4¢ respectively, subject to the customary discount.

**Spelter.**—The market is very dull. Brass manufacturers are buying absolutely nothing, while some of the Western manufacturers are accumulating more metal than they care to carry. We quote 5.20¢ @ 5.25¢ for Common Domestic.

## New York Metal Exchange.

The following sales are reported:

THURSDAY, March 1.	
20 tons Tin, March.	36.00¢
150,000 lb Copper, March.	16.00¢
50,000 lb Copper, April.	16.20¢
125,000 lb Copper, May.	16.30¢
50 tons Lead, March.	5.17 1/2¢
10 tons Tin, May.	31.35¢
10 tons Tin, May.	31.3¢
FRIDAY, March 2.	
75,000 lb Lake Copper, March.	16.00¢
25,000 lb Lake Copper, May.	16.30¢
25,000 lb Lake Copper, April.	16.25¢
16 tons Lead, August.	5.32 1/2¢
16 tons Lead, September.	5.32 1/2¢
66 tons Lead, October.	5.32 1/2¢
48 tons Lead, October.	5.35¢
20 tons Tin, May.	31.2¢
SATURDAY, March 3.	
25,000 lb Copper, spot.	16.00¢
25,000 lb Copper, April.	16.20¢
50,000 lb Copper, April.	16.25¢
75,000 lb Copper, May.	16.30¢
50,000 lb Copper, July.	16.30¢
25,000 lb Copper, April.	16.25¢
50,000 lb Copper, March.	16.5¢
MONDAY, March 5.	
20 tons Tin, April.	33.30¢
10 tons Tin, April.	33.35¢
10 tons Tin, May.	31.90¢
100,000 lb Copper, March.	16.10¢
25,000 lb Copper, May.	16.40¢
25,000 lb Copper, June.	16.30¢
25,000 lb Copper, spot.	16.15¢
75,000 lb Copper, spot.	16.10¢
100,000 lb Copper, April.	16.25¢
100,000 lb Copper, March.	16.15¢
25,000 lb Copper, spot.	16.10¢
150,000 lb Copper, spot.	16.10¢
75,000 lb Copper, March.	16.10¢
50,000 lb Copper, April.	16.30¢
10 tons Tin, April.	33.35¢
10 tons Tin, April.	33.40¢
TUESDAY, March 6.	
20 tons Tin, May.	31.30¢
50,000 lb Copper, May.	16.45¢
50,000 lb Copper, April.	16.50¢
32 tons Lead, September.	5.35¢
10 tons Tin, May.	31.40¢
10 tons Tin, May.	31.35¢
10 tons Tin, May.	31.30¢
50 tons Tin, May.	31.25¢
40 tons Tin, May.	31.30¢
10 tons Tin, May.	31.35¢
50,000 lb Copper, March.	16.25¢
16 tons Lead, May.	5.27 1/2¢
80 tons Lead, September.	5.35¢
64 tons Lead, October.	5.35¢
16 tons Lead, November.	5.35¢
WEDNESDAY, March 7.	
225,000 lb Lake Copper, July.	16.40¢
175,000 lb Lake Copper, March.	16.35¢
25,000 lb Lake Copper, March.	16.30¢
62,000 lb Lake Copper, April.	16.50¢
75,000 lb Lake Copper, May.	16.60¢
200,000 lb Lake Copper, June.	16.50¢
100,000 lb Lake Copper, spot.	16.30¢
100,000 lb Lake Copper, June.	16.55¢
25,000 lb Lake Copper, March.	16.40¢
350,000 lb Lake Copper, May.	16.65¢
20 tons Tin, March.	35.85¢
40 tons Tin, March.	35.80¢
10 tons Tin, March.	35.95¢
10 tons Tin, April.	35.45¢
10 tons Tin, April.	35.50¢
10 tons Tin, May.	31.25¢
10 tons Tin, June.	30.30¢



# Hardware.

There is little change in the condition of the Hardware market, business continuing fair, without material increase. Prices are steady, there being few changes in leading lines.

## BARB WIRE.

During the week under review the Eastern manufacturers of Barb Wire have advanced the price of Four-Point Galvanized in carload lots from 4 cents to 4.1 cents. Barb Wire is offered from other quarters, however, at a lower figure.

## NAILS.

The New York market is steady, with considerable inquiry, and store lots firm at \$2.10 for Iron Nails. During the past week quite a number of purchases have been made by Hardware houses on the basis of \$1.80 for Iron and \$1.90 for Steel at mill, in anticipation of the spring trade, the conviction gaining ground that the lowest point has been passed.

A meeting of Nail manufacturers was held on Tuesday at Philadelphia, at which details of the proposed association were discussed. Favorable progress was made, there having been some adjustment of allotments. The scheme has not yet been finally carried through.

## WIRE NAILS.

Since the conference between the representatives of the leading companies, to which we alluded in our last issue, the market has been somewhat stronger, the proposed advance being well maintained. The price from store may be named as \$2.75 to \$2.90.

## MISCELLANEOUS PRICES.

The Strap and J Hinge market is unsettled and slightly lower. Some of the manufacturers are refraining from pushing the goods at the present low prices, but others are making slight concessions and soliciting orders. The Wheeling Hinge Company, Wheeling, W. Va., are reported to be preparing to resume the manufacture of these goods, having been out of the market for a number of years under an arrangement with the associated manufacturers. They have, however, facilities for purchasing the goods, and it is understood that they are desirous of regaining their former trade.

Stove Hollow-Ware has been advanced about 5 per cent. by the manufacturers. It will, however, probably be some time before this advance has much effect on the market prices, as most houses handling the goods in a large way have been purchasing heavily and their prices will undoubtedly make the market.

The manufacturers of Wooden Wringers have been in conference and have formed what is regarded as an association, with a view to regulating the production and prices of the goods. Under the new prices there is the same deduction of \$3 per dozen, with a quantity discount to purchasers of 10 dozen.

The Snath and Cradle manufacturers have agreed to make an advance in the prices of Snaths and Cradles. The market has of late been extremely irregular and low and is now characterized by a better tone.

Hartley & Graham, 17 Maiden Lane, N. Y., issue a circular and list of Loaded Shells, on which they quote a discount of 20 and 10 per cent. in case lots of 500.

The new catalogue of the Hartford Hammer Company, Hartford, Conn., for whom John H. Graham & Co. are agents, 113 Chambers street, New York, is a well printed pamphlet of nearly 100 pages which illustrates the different patterns of

Hammers, Sledges and Mauls which they manufacture. They refer in their introductory circular to their recently erected new plant, with new improved machinery in all departments, thus giving them increased facilities for the prompt filling of orders. The catalogue is accompanied by the following discount sheet:

	Per cent.
Adze-Eye Nail Hammers.....	33 1/2 & 5
Patent Nail-Holding Hammers.....	33 1/2 & 5
Workman Adze-Eye Nail Hammers.....	33 1/2 & 5
Workman Adze-Eye Bell-Face Hammers.....	33 1/2 & 5
Standard Adze-Eye Hammers.....	33 1/2 & 5
Machinists' Adze-Eye Ball-Pein Hammers.....	50
Machinists' Adze-Eye Straight-Pein Hammers.....	50
Riveting Adze-Eye Hammers.....	50
Farriers' Adze-Eye Hammers.....	50
Horse Shoers' Adze-Eye Fitting Hammers.....	50
Horse Shoers' Turning Hammers.....	50
Tinners' Riveting Hammers.....	50
Tinners' Planeing Hammers.....	50
Riveting Plain-Eye Hammers.....	50
Engineers' Single-Face Hammers.....	50
Engineers' Double-Face Hammers.....	50
Blacksmiths' Hand Hammers.....	50
Coopers' Hammers.....	50
Carriage Ironers' Hand Hammers.....	50
Chipping Hammers.....	50
Machinists' Ball-Pein Octagon Pattern Hammers.....	50
Machinists' Straight-Pein Octagon Pattern Hammers.....	50
Machinists' Cross-Pein Octagon Pattern Hammers.....	50
Brad Hammers.....	50
Tack Hammers.....	50
Boiler Makers' Riveting Hammers.....	65 & 10
Drilling or Striking Hammers.....	65 & 10
Hand Drill or Stone Cutters' Hammers.....	65 & 10
Masons' Hammers.....	65 & 10
Masons' Hammers with teeth.....	65 & 10
Napping Hammers.....	65 & 10
Tack Claws.....	25
Spalling or Stone Hammers.....	65 & 10
Blacksmiths' Hand Hammers.....	65 & 10
Blacksmiths' Sledges.....	65 & 10
Coal Sledges.....	65 & 10
Horse Shoers' Turning Sledges.....	65 & 10
Stone Sledges.....	65 & 10
Stone Axes.....	65 & 10
Railroad Mauls.....	65 & 10
Ship or Top Mauls.....	65 & 10
Wood Choppers' Mauls.....	65 & 10
Wedges, Truckee Pattern.....	65 & 10
Wedges, Hartford Hammer Company's Pattern.....	65 & 10
Railroad Track Chisels.....	65 & 10
Handles.....	25

Francis S. Dangerfield, Auburn, N. Y., issues a circular relating to his Self-Igniting Match Case, of which a description is given. It is sold at the following prices:

	Per doz.
Treble Plate, XX Tin.....	\$1.00
Treble Plate, with cigar clipper.....	1.40

Under date February 2, the Reading Hardware Company, Reading, Pa., issued revised list prices of Door Locks, Knobs and Lock Furniture. The new list is subject to a discount of 55 per cent.

H. M. Quackenbush, Herkimer, N. Y., announces the following reduced list prices on the Air Guns, &c., of his manufacture, which on the Guns are \$2 to \$3 lower. The list is subject to a discount of 25 per cent.:

	New list.
No. 1 or Improved Air Gun, either plated or brown finish.....	\$8.00
No. 2 or New Model Air Gun.....	10.00
No. 3 or Shot Air Gun.....	10.00
No. 4 or Magazine Air Gun.....	12.00
No. 5 or Combination Air Gun.....	15.00
No. 5 or Combination Air Gun, smooth bore.....	13.50
Extra for Globe and Peep Sights on Combination Gun.....	3.00
17, 21 and 21 1/2-100 Darts, per dozen.....	.50
Felted Slugs, per box of 100.....	.12
Burred Slugs, per box of 100.....	.08

## ITEMS.

The Goulds Mfg. Company, Seneca Falls, N. Y., and 60 Barclay street, New York, issue special circulars, one of which is devoted to Hydrants, Street Washers, Curb Boxes, &c., and another to their new Double-Acting Force Pump for spraying trees, cotton, plants, &c. This pump is especially designed for diffusing liquids or poisons of any kind upon trees, shrubs or plants affected by bugs, worms or insects,

and is referred to as especially serviceable on account of its capacity, and the fact that it is double acting, throwing a continuous and powerful stream. It is represented in use attached to a barrel which is carried on a wagon.

E. Bement & Sons, Lansing, Mich., issue a neat pamphlet of 100 pages representing the implements for the farm and garden of which they are manufacturers. A variety of Plows, Cultivators, Harrows, &c., are represented, with concise descriptions and the list prices. They also call attention to their Bob Sleds, of which they state they have the largest factory in the world, every description of Sled being referred to, as made for the farm, road, mining, mountain and logging.

*Lock and Bell* is the title of a new monthly paper devoted to the interests of locksmith, bell-hangers, gunsmith, silver and nickel plated and electrical work. It is published by William Byrnes, 237 Broadway, New York, and contains articles and information relating to the specialties of its field, with descriptions of recent patents on Locks, Bells, Guns and other subjects covered by the paper, thus giving a variety of interesting matter which will be of service to those for whom it is designed.

W. P. Townsend & Co., New Brighton, Pa., issue a circular announcing that Chas. W. Evans & Co., Cincinnati, Ohio, are their representatives in that vicinity for the sale of Rivets and Wire Nails.

The Champion Horse Nail Company, Appleton, Wis., have sold their machinery, Horse Nails and business to the Northwestern Horse Nail Company, of Chicago, who will continue to manufacture and sell the Champion Horse Nails.

Robert Mann & Sons, Mill Hall, Pa., issue a very handsome and finely printed catalogue of their well-known line of Axes. The catalogue represents the different patterns in gold and colors, which, with the superior quality of the paper in which the book is printed, make a very effective display. Cuts are also given illustrating the different methods of making the Axes—that is, with steel inserted, or overlaid. Reference is also made to the advantages of both of these constructions, the overlaid steel being alluded to as giving a larger steel surface and a stronger connection between the steel and the iron, while the advantage claimed in favor of the inserted steel is, that there is 1/4 inch more available steel. This is, however, regarded as practically of no importance, as it is mentioned that in their experience of 40 years they have never seen an Axe of either inserted or overlaid steel where the steel has been used up to the iron. They leave it to their customers to decide which method is preferable, as they have no preference so far as the manufacture is concerned, the cost being to them the same in either case.

The Buffalo Lock Mfg. Company issue a circular in which they announce that they have purchased the Lock patterns, patents, &c., of the Clark Mfg. Company, and that they will continue the business, adding to the same such new features and patterns as are necessary to make a complete line of Locks, Knobs, Shutter Bars and Ornamental Butts, and other goods pertaining to inside house trimmings. E. M. and J. E. Mix, formerly with the Touresend Mfg. Company, Westfield Lock Company and the Clark Mfg. Company are associated with them.

The Leicester Wire Company, Leicester, Mass., manufacturers of Iron and Steel Wire, issue a neatly printed and conveniently arranged pamphlet which is a perpetual Due Date Table and Four-yea Calendar. It also calls attention on th last page to their manufactures an

mentions that, having made extensive additions to their works and filled them with the most approved machinery, they are now provided with every facility for the manufacture of Iron and Steel Wire of various descriptions.

The Baldwin Mfg. Co., Burlington, Vt., issue a large and handsomely printed catalogue descriptive of their Baldwin Refrigerators. *Fac-similes* are given of awards, medals, &c. from different expositions, and a full description is given of the special features of the Refrigerators, the principle of circulation being especially emphasized. The body of the pamphlet contains illustrations, descriptions and list prices of the varied line of Refrigerators, and closes with a number of testimonials from those who have used the goods. Another pamphlet containing most of the matter of the large catalogue is also issued.

Early last year John Wilson, Sheffield, England, commenced using cardboard cartons for casing up his celebrated Butchers' Knives, instead of continuing the old mode of wrapping in brown paper, which he found to be attended with some inconvenience, especially in the retail Hardware stores. The new style has met with universal approval, and the sales are referred to as being much facilitated. The new cases are portable, neat, and afford easy access to their contents, and are adapted for all sizes of Butcher Knives from 4½ to 12 inches inclusive.

The new catalogue of the Fulton Iron and Engine Works, Detroit, Mich., represents their well-known line of Detroit Blacksmith and other Hardware specialties. It represents their Cheney Combined Anvil and Vise, Hand Punchers, Iron Shears, Tire Upsetters, Savine Patent Fire-pitch with Tuyere Iron and Cinder Grate, Ventilators, and the Detroit Perfected Tire Bender, of which we gave a description in our last issue. The company call special attention to the fact that every article before leaving their shops is tested, and material and workmanship guaranteed as represented.

Maher & Grosh, Toledo, Ohio, issue their price list of Pocket Cutlery, Razors, Scissors, Axes, Butcher Knives, &c., in the form of a 64-page, fully illustrated pamphlet, which, beginning with Pocket Cutlery and ending with Barbers' Clippers, represent a varied assortment of goods in the lines indicated.

F. Powell & Co., proprietors of the Toledo Wire and Iron Works, in their illustrated catalogue show the Bird Cages, Wire Cloth, Sieves, Reels, Traps and other Wire goods of which they are manufacturers.

E. P. Breckinridge & Co., Toledo, Ohio, represent in their catalogue the different styles of Grocers' Fixtures and Druggists' Tinware of which they are manufacturers. They allude in their preface to their 10 years' experience in making Tin Cans, Pails, Caddies, Crystal Tin, &c., and mention the recent enlargement of their factory. The pamphlet represents a number of different patterns of these goods.

The Gendron Iron Wheel Company, Toledo, Ohio, have issued their Spring catalogue relating to a large line of Children's Carriages, Velocipedes, Bicycles and Tricycles, Goat and Dog Sulkies, Express Wagons, Toy Barrows, Doll Cabs, &c. It is a handsomely printed pamphlet of more than 100 pages. They allude to their increased facilities for manufacture, and call special attention to their new styles of low priced Round and Square Reed Body Carriages.

The catalogue of the Humphreys Mfg. Company, Mansfield, Ohio, represents a varied line of Cistern, Pitcher, Well, Wind Mill and Force Pumps, Horizontal Rotary and Boiler Feed Pumps, Hydraulic

Rams, Hydrants, &c., of which they are manufacturers, together with Plumbers' Iron Ware—Sinks, Sewer and Cellar Traps, Cesspools, Boiler Stands, &c., and the company have recently added a complete line of Soil Pipe and Fittings. Their manufacturing plant is referred to as covering an area of 3½ acres, and furnishing employment to 300 men, the capacity for production being 30 tons of finished goods per day.

The Chicago Stamping Company, Chicago, Ill., have issued two new catalogues. One contains the list prices of Deep and Shallow Stamped, Pieced, Plain and Japanned Ware, which are illustrated in their catalogue No. 6. The other catalogue comprises spring and summer goods—Bird Cages, Water Coolers, Ice Cream Freezers, Refrigerators, &c. A number of new styles of Bird Cages, Brass and Japanned, are represented.

Tower & Lyon, 95 Chambers street, New York, issue an effective colored display card on cloth, illustrating their line of Chaplin's Patent Iron Planes and Wood Bottom Planes. It is neatly finished and bound in brass top and bottom, with an eye by which it is to be suspended.

The Fred. J. Meyers Mfg. Company, Covington, Ky., make the following announcement in appropriate form, under date February 27:

It is with feelings of profound sorrow that we announce to the trade the death of our Mr. R. S. Craig, who was burned to death in Tilly's Hotel fire at Shreveport, La., on Saturday night, February 25. For over 12 years he has represented us on the road, and we feel that in his death we have lost a dear friend and faithful servant.

The funeral services were attended at Spring Grove Chapel, at Cincinnati, on Friday last.

The Chicago Tack Company, Grand Crossing, Ill., have made arrangements with H. H. & C. L. Munger, 142 Lake street, Chicago, whereby they will be represented to the trade by their traveling salesmen, who will be in a position to furnish the lowest factory rates.

A. F. Seeberger & Co., Chicago, Ill., announce that they have succeeded Pribyl Bros., having purchased their stock of Cutlery, Guns and Fishing Tackle. With this addition to their stock they refer to the fact that they are now offering one of the best selected and most complete lines of these goods in the West. Their catalogue relating to their Sporting Goods is in press and will be ready for mailing in a few weeks.

By a typographical error the Special Notice signed "E. C. B.," in regard to the sale of an established Hardware business, was referred to in our last issue as being on page 39, instead of page 60, where it was to be found. The same announcement, which appears to relate to an opportunity deserving attention from those desiring such an opening, is found on page 47 of this issue.

It will be observed in their announcement on page 76 that the Boston and Lockport Block Company, Boston, Mass. and Lockport, N. Y., illustrate the Farmers' Hay Pulley formerly made by the Reed Mfg. Company. Its special features and advantages are pointed out.

The Chamois Leather Cloth, to which we referred in our last issue, is put on the market in this country by Alexander Christie, 25 White street, New York, who is the sole wholesale agent for the United States. This new fabric, which is woven, is in feeling and appearance somewhat similar to the genuine Leather, but unlike the latter is referred to as keeping its softness after being wet, instead of becoming hard as the Chamois Leather does. The

following description of it and the advantages connected with its use is taken from the *British Trade Journal*:

It is a textile fabric manufactured in such a way that it possesses the qualities of chamois leather both in feel and wear, and besides this remains soft before and after washing. Chamois leather, it is well known, becomes hard when dried after immersion in water, and is then comparatively useless. Chamois leather cloth, on the other hand, remains soft and supple under any conditions, and can be used either wet or dry. Thus it is quite as useful for window, carriage, and glass cleaning as for polishing furniture and plate. For the rubbing of furniture it will be found even superior to silk, and its value for this purpose renders it an article indispensable to all who wish to preserve their polished woodwork in perfect condition. For cleaning plate, brasswork, copper, and similar metals it will be found a most effective substitute for the cloth, leather or dusters generally used. Its extreme softness and pliability, whether wet or dry, will insure its favorable reception among owners of carriages, the highly-varnished surfaces of which are so apt to be scratched by the coarse material frequently used.

The cloth is made in sizes ranging from 18 x 18 inches to 24 x 24 inches, which are designated and described as follows:

No. C/21, 18 x 18, Suitable for General Polishing Purposes.

No. C/37, 24 x 24, Suitable for Cleaning Windows, Carriages &c.

No. 883, 24 x 24, New Leather Cloth Duster, specially suitable for Polishing Furniture and General Dusting Purposes.

Announcement is made of a change in the management of the Pratt Hardware Company, Buffalo, N. Y., W. H. Sherman having resigned as president, withdrawing from the service of the company and disposing of his stock. E. B. Pratt has been elected president in his place.

The sad intelligence has been received of the drowning of Alfred E. Grosjean, son of the well-known manufacturer of this city, while on a gunning excursion in Florida.

The suit of the Enterprise Mfg. Company against Sargent & Co., in regard to patents on Meat Choppers, has just been decided in the United States Circuit Court for the district of Connecticut, the decision being rendered by Justice Shipman. The plaintiffs were represented by Chas. Howson and C. E. Mitchell. The Enterprise Mfg. Company, as is well known, are the originators and owners of the Enterprise Meat Chopper, the machine having been invented by John G. Baker, a member of the company. Sargent & Co. have been manufacturing and selling a Meat Cutter known as the Eclipse, which the plaintiffs claimed infringed their patent. Suit for infringement was accordingly brought, and after an exhaustive and thorough review of the case the judge rendered a decree in favor of the Enterprise Mfg. Company for an accounting and an injunction against the defendants for infringement of the plaintiff's patent. A synopsis of the decision will be given in our next issue.

THE CHICAGO SPRING BUTT COMPANY, of Chicago, have issued a new illustrated catalogue of their specialties. In the directions for winding up their Springs they state that the proper length of a Spring is about two coils too short before the tension is on, so that about 1½ turns for tension make it the right length. Some changes are noted in the new catalogue. A Pin Set Screw has been introduced in both their single and double-acting Chicago Spring Butts for the purpose of tightening the coil when necessary. A valuable feature has been added to their Saloon-Door Hinges. An additional Pivot Upper Hinge for screwing on the side of the door when its top is finished with a molding is packed with every set of these Hinges.



An extra-heavy front door Fire Engine-House Spring Hinge has been added to the line. Some changes are noted in the price list. A special rate has been made for Japanned Nickel Spring. The list price of Chicago Double-Acting Spring Butts, with Japanned Nickel Spring, is as follows per pair:

Door.	Door.
$\frac{3}{4}$ to 1 inch....\$1.30	$1\frac{1}{4}$ to 2 inches....\$4.75
$1\frac{1}{8}$ to $1\frac{1}{4}$ inches. 1.70	$2\frac{1}{4}$ to $2\frac{3}{4}$ inches... 7.75
$1\frac{1}{2}$ to $1\frac{3}{4}$ inches 3.00	$2\frac{3}{4}$ to $3\frac{1}{2}$ inches...10.75

Chicago Single-Acting Spring Butts in the same finish, per pair:

$\frac{3}{4}$ to $1\frac{1}{8}$ inches..\$1.25	$1\frac{1}{4}$ to $2\frac{1}{4}$ inches.. \$3.75
$1\frac{1}{8}$ to 2 inches.. 2.50	

Garden City Double Acting Spring Butts, same finish, per pair:

$\frac{3}{4}$ to $1\frac{1}{8}$ inches..\$1.30	$2\frac{1}{4}$ to $2\frac{3}{4}$ inches....\$7.25
$1\frac{1}{8}$ to $1\frac{1}{4}$ inches.. 2.75	$2\frac{3}{4}$ to 3 inches.... 9.50
$1\frac{1}{4}$ to 2 inches.. 5.00	

Garden City Single-Acting Mortise Spring Butts, same finish, per pair:

$\frac{3}{4}$ to $1\frac{1}{8}$ inches..\$1.00	$1\frac{1}{4}$ to 2 inches.. \$3.50
$1\frac{1}{8}$ to $1\frac{1}{4}$ inches.. 2.00	

Garden City Surface Storm Door Spring Hinge, same finish, per pair,  $\frac{3}{4}$  to  $1\frac{1}{4}$  inches, 50 cents; ditto, Screen Door, 35 cents. Keene's Patent Double Acting Saloon Door Hinge, same finish, per pair, \$1. Garden City Fire Engine House Spring Hinge, extra heavy front door, per pair, \$7. Door Pull, bronze metal, 12-inch oblique, \$30 per dozen; 14-inch oblique, \$40 per dozen.

Their discount sheet relates to the catalogue; terms, 30 days, 2 per cent. discount, for cash in ten days.

Chicago Spring Butts, all	30
Blank	30
Garden City Spring Butts all	40
Blank	40
" " Spring	6 A. \$18 per gross, net
" " " Except 6 A.	50
" " " 6 B. \$15 per gross, net	
" " " Except 6 B.	50
Chicago Spring Hinges, all, \$14 per gross	Net
Saloon Door Spring Hinges, all	30
Garden City	30
Reliance Door Springs, all	40
Chicago Chair, Iron	30
Plated House Numbers, all	50
Plated Letters	50
Push and Pull Plates	40
Door Pulls, No. 63	30
" " 64	30
" " 65	30
" " 66	30

#### ARRANGEMENT OF HARDWARE STORES.

Kellogg, Johnson & Bliss, Chicago, of whose store we gave a description in our last issue, have given some attention to the matter of properly caring for catalogues and price lists of Hardware. For this special purpose they have had a

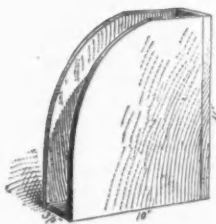


Fig. 200.—Construction of Pamphlet Boxes.

cabinet built. It is about 6 feet high, 21 inches wide between the sides, and the shelves are 10 to 12 inches deep, the three lowest shelves being the deepest. It is represented in Fig. 201.

The three lower shelves are used for bound catalogues, arranged so as to have those relating to kindred lines together as nearly as possible. The three upper shelves are filled with small wooden boxes, six on a shelf, which fit tight against each other, and extend up close enough to the top of the shelf above to exclude dust, and are furnished with small knobs so that they can be pulled out easily. These boxes are  $3\frac{1}{2}$  inches wide, 11 inches high and 10

inches deep, and are made of  $\frac{1}{4}$  inch pine, with a  $\frac{3}{4}$  inch front piece. Following is a representation of one of the boxes, Fig. 200.

They are made open in the rear, so that the contents can be easily grasped and lifted out. These boxes are intended for price lists and catalogues, with flexible covers, small pamphlets, and such publications as will not stand on the lower

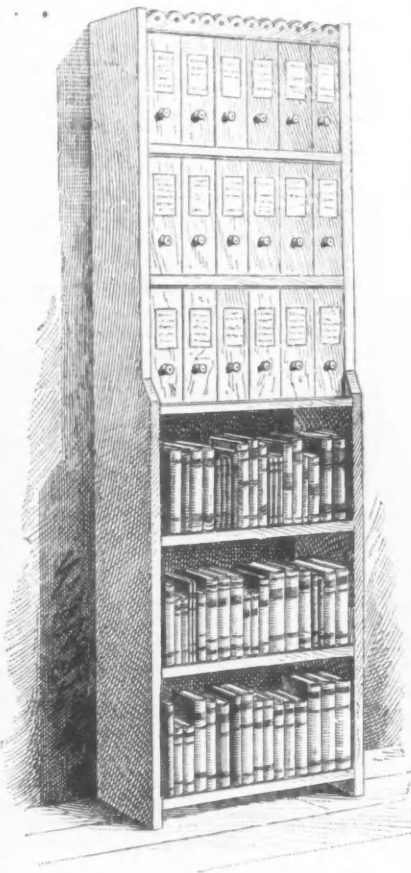


Fig. 201.—Cabinet for Catalogues, Price Lists, &c.

shelves. Catalogues and price lists of the same kind are put in each box, and holes are punched through each one, so that they can be tied together with a piece of tape, forming a roughly bound volume. On the front of each box a piece of paper is tacked above the knob bearing the name of each firm or company represented in the box. As an indication of the method of classification the following list is taken from one of the boxes:

CHISHOLM SHOVEL COMPANY.  
O. AMES & CO.  
ST. LOUIS SHOVEL COMPANY.  
REED MFG. COMPANY.  
MOORE MFG. COMPANY.  
MEDINA MFG. COMPANY.  
LAWRENCE BROS.  
PRESCOTT MFG. COMPANY.  
SCRANTON MFG. COMPANY.

Another box bears this list:

GERMANTOWN TOOL COMPANY.  
VAUGHN & BUSHNELL.  
PORTSMOUTH WRENCH COMPANY.  
BONNEY VISE AND TOOL COMPANY.  
KRAEUTER & CO.  
BEMIS & CALL COMPANY.  
C. W. DUNLAP & CO.  
HARTFORD HAMMER COMPANY.  
CINCINNATI TOOL COMPANY.  
MILLERS FALLS COMPANY.

There are some very large flexible catalogues published which cannot be put in these boxes. In order to keep them from becoming scattered and lost, they are also punched and tied together in a single volume. Of course, the whole book will then have to be handled in looking for a particular article in a certain catalogue, but this objection, it is claimed, is greatly counterbalanced by the certainty that the

large book will not be carelessly laid down somewhere and be swept out. This book is kept in a drawer, easily accessible.

In order to accommodate small lists and circulars, rendering them accessible and at the same time guard against their being mislaid or lost, a patent back invoice book is used with alphabetical index in front and numbered pages. In this the cards, leaves, circulars and small pamphlets are pasted, attaching them only by one margin, so that they can be removed easily when new ones are to be substituted. As nearly as possible those referring to the same line of goods are grouped together, and they are indexed under names of articles and not names of manufacturers. This book is found to be a great convenience.

#### THE MERCHANDISE MARKS ACT.

We print below the full text of the English Merchandise Marks Act, which has recently gone into operation. It will be of interest to manufacturers and merchants, especially as it informs them in regard to the application of the act to goods sent from this country to England. It will be seen that it is strict in its provisions and wide reaching in its effects, and if given a literal interpretation and a rigid enforcement it is likely to necessitate some modification of existing trade methods, especially with reference to the designation or description of goods. It is aimed especially against German goods, which have recently been imported into England in increasing quantities, and in many cases with marks which disguised their German origin, much to the annoyance of English manufacturers, but it applies as well to goods imported from this or any other country. A number of seizures have already been made, the penalty being the confiscation of the goods. The effect of the law and the spirit in which it is enforced is indicated by such facts as these: German Cutlery has been seized for bearing the words "Superior Quality," which being in English are regarded as disguising the German origin; Tools marked "H. Boker's Best" were stopped for the same reason; several lots of American goods, including Axes, Levels, Steel Goods, Shears and Try Squares, have been seized, because they do not designate the place of manufacture. A consignment of Glass Goods, free from mark, description or name, arrived in cases marked with the initials of a firm A. B. & Co., London, and were stopped, it being held that this marking was with the design of giving the impression that they were of English manufacture. It will also be seen that under Section 3 what constitutes a trade description is explained, and that the act prohibits any false statement as to the number, quantity, &c., of goods or as to the mode of manufacturing or the material of which they are made, so that, if the description is in any way misleading or incorrect, the goods cannot be imported or sold. The statement thus has interest as explaining the policy which is pursued with a view to preventing inaccurate and misleading marking of goods, and may suggest the inquiry as to whether or not a similar statute in this country might not be serviceable in preventing certain objectionable trade practices.

#### Merchandise Marks Act, 1887.

An act to consolidate and amend the law relating to fraudulent marks on merchandise.

Be it enacted by the Queen's most excellent majesty, by and with the advice and consent of the Lords spiritual and temporal, and commons, in this present Parliament assembled, and by the authority of the same, as follows:

1.—This act may be cited as the Merchandise Marks act, 1887.

2.—(1) Every person who  
(a) forges any trade mark; or,

(b) falsely applies to goods any trade-mark or any mark so nearly resembling a trade-mark as to be calculated to deceive; or,  
 (c) makes any die, block, machine or other instrument for the purpose of forging or of being used for forging a trade-mark; or,  
 (d) applies any false trade description to goods; or  
 (e) disposes of or has in his possession any die, block, machine or other instrument for the purpose of forging a trade-mark; or  
 (f) causes any of the things above in this section mentioned to be done, shall, subject to the provisions of this act, and unless he proves that he acted without intent to defraud, be guilty of an offense against this act.

(2) Every person who sells, or exposes for, has in his possession for, sale, or any purpose of trade or manufacture, any goods or things to which any forged trade-mark or false trade description is applied, or to which any trade-mark or mark so nearly resembling a trade-mark as to be calculated to deceive is falsely applied, as the case may be, shall, unless he proves—

(a) That having taken all reasonable precautions against committing an offense against this act, he had at the time of the commission of the alleged offense no reason to suspect the genuineness of the trade-mark, mark or trade description; and  
 (b) That on demand made by or on behalf of the prosecutor he gave all the information in his power with respect to the persons from whom he obtained such goods or things; or  
 (c) That otherwise he had acted innocently,  
 be guilty of an offense against this act.

(3) Every person guilty of an offense against this act shall be liable—

(i) on conviction on indictment, to imprisonment with or without hard labor, for a term not exceeding two years, or to fine, or to both imprisonment and fine; and  
 (ii) on summary conviction to imprisonment, with or without hard labor, for a term not exceeding four months, or to a fine not exceeding £208, and in the case of a second or subsequent conviction to imprisonment, with or without hard labor, for a term not exceeding six months, or to a fine not exceeding £50; and  
 (iii) in any case, to forfeit to Her Majesty every chattel, article, instrument, or thing by means of, or in relation to which, the offense has been committed.

(4) The court before whom any person is convicted under this section may order any forfeited articles to be destroyed or otherwise disposed of as the court thinks fit.

(5) If any person feels aggrieved by any conviction made by a court of summary jurisdiction, he may appeal therefrom to a court of quarter sessions.

(6) Any offense for which a person is, under this act, liable to punishment on summary conviction may be prosecuted, and any articles liable to be forfeited under this act by a court of summary jurisdiction may be forfeited, in manner provided by the Summary Jurisdiction acts: Provided that a person charged with an offense under this section before a court of summary jurisdiction shall, on appearing before the court, and before the charge is gone into, be informed of his right to be tried on indictment, and if he requires be so tried accordingly.

3.—(1) For the purposes of this act—

The expression "trade-mark" means a trade-mark registered in the register of trade-marks kept under the

Patents, Designs, and Trade-Marks act, 1883, and includes any trade-mark which either with or without registration, is protected by law in any British possession or foreign state to which the provisions of the 103d section of the Patents, Designs, and Trade-Marks act, 1883, are, under Order in Council, for the time being applicable:

The expression "trade description" means any description, statement, or other indication, direct or indirect.

(a) as to the number, quantity, measure, gauge, or weight of any goods, or  
 (b) as to the place or country in which any goods were made or produced, or  
 (c) as to the mode of manufacturing or producing any goods, or  
 (d) as to the material of which any goods are composed, or  
 (e) as to any goods being the subject of an existing patent, privilege or copyright,

and the use of any figure, word or mark which, according to the custom of the trade, is commonly taken to be an indication of any of the above matters, shall be deemed to be a trade description within the meaning of this act.

The expression "false trade description" means a trade description which is false in a material respect as regards the goods to which it is applied, and includes every alteration of a trade description, whether by way of addition, effacement or otherwise, where that alteration makes the description false in a material respect, and the fact that a trade description is a trade-mark, or part of a trade-mark, shall not prevent such trade description being a false trade description within the meaning of this act.

The expression "goods" means anything which is the subject of trade, manufacture or merchandise.

The expressions "person," "manufacturer, dealer or trader," and "proprietor" include any body of persons, corporate or unincorporate.

The expression "name" includes any abbreviation of a name.

(2) The provisions of this act respecting the application of a false trade description to goods shall extend to the application to goods of any such figures, words or marks or arrangement or combination thereof, whether including a trade-mark or not, as are reasonably calculated to lead persons to believe that the goods are the manufacture or merchandise of some person other than the person whose manufacture or merchandise they really are.

(3) The provisions of this act respecting the application of a false trade description to goods, or respecting goods to which a false trade description is applied, shall extend to the application to goods of any false name or initials of a person, and to goods with the false name or initials of a person applied, in like manner as if such name or initials were a trade description, and for the purpose of this enactment the expression "false name or initials" means as applied to any goods, any name or initials of a person which—

(a) are not a trade-mark, or part of a trade-mark, and  
 (b) are identical with, or a colorable imitation of, the name or initials of a person carrying on business in connection with goods of the same description, and not having authorized the use of such name or initials, and  
 (c) are either those of a fictitious person or of some person not *bona fide* carrying on business in connection with such goods.

4.—A person shall be deemed to forge a trade-mark who either—

(a) without the assent of the proprietor of the trade-mark makes that trade-mark or a mark so nearly resembling that trade-mark as to be calculated to deceive; or

(b) falsifies any genuine trade-mark, whether by alteration, addition, effacement, or otherwise;

and any trade-mark or mark so made or falsified is in this act referred to as a forged trade-mark.

Provided that in any prosecution for forging a trade-mark the burden of proving the assent of the proprietor shall lie on the defendant.

5.—(1) A person shall be deemed to apply a trade-mark or mark or trade description to goods who—

(a) applies it to the goods themselves, or

(b) applies it to any covering, label, reel, or other thing in or with which the goods are sold or exposed or had in possession for any purpose of sale, trade, or manufacture; or

(c) places, encloses, or annexes any goods which are sold or exposed or had in possession for any purpose of sale, trade, or manufacture, in, with, or to any covering, label, reel, or other thing to which a trade-mark or trade description has been applied; or

(d) uses a trade-mark or mark or trade description in any manner calculated to lead to the belief that the goods in connection with which it is used are designated or described by that trade-mark or mark or trade description.

(2) The expression "covering" includes any stopper, cask, bottle, vessel, box, cover, capsule, case, frame, or wrapper; and the expression "label" includes any band or ticket.

A trade-mark, or mark, or trade description, shall be deemed to be applied whether it is woven, impressed, or otherwise worked into, or annexed, or affixed to the goods, or to any covering, label, reel, or other thing.

(3) A person shall be deemed to falsely apply to goods a trade-mark or mark who, without the assent of the proprietor of a trade-mark applies such trade-mark, or a mark so nearly resembling it as to be calculated to deceive, but in any prosecution for falsely applying a trade-mark or mark to goods the burden of proving the assent of the proprietor shall lie on the defendant.

6.—Where a defendant is charged with making any die, block, machine or other instrument for the purpose of forging, or being used for forging, a trade-mark, or with falsely applying to goods any trade-mark or any mark so nearly resembling a trade-mark as to be calculated to deceive, or with applying to goods any false trade description, or causing any of the things in this section mentioned to be done, and proves—

(a) That in the ordinary course of his business he is employed, on behalf of other persons, to make dies, blocks, machines, or other instruments for making, or being used in making, trade-marks, or as the case may be, to apply marks or descriptions to goods, and that in the case which is the subject of the charge he was so employed by some person resident in the United Kingdom, and was not interested in the goods by way of profit or commission dependent on the sale of such goods; and

(b) That he took reasonable precautions against committing the offense charged; and



(c) That he had, at the time of the commission of the alleged offense, no reason to suspect the genuineness of the trade-mark, mark, or trade description; and

(d) That he gave to the prosecutor all the information in his power with respect to the persons on whose behalf the trade-mark, mark or description was applied—

he shall be discharged from the prosecution, but shall be liable to pay the costs incurred by the prosecutor, unless he has given due notice to him that he will rely on the above defense.

7.—Where a watch case has thereon any words or marks which constitute, or are by common repute considered as constituting, a description of the country in which the watch was made, and the watch bears no description of the country where it was made, those words or marks shall *prima facie* be deemed to be a description of that country within the meaning of this act, and the provisions of this act with respect to goods to which a false trade description has been applied, and with respect to selling or exposing for or having in possession for sale, or any purpose of trade or manufacture, goods with a false trade description, shall apply accordingly, and for the purposes of this section the expression "watch" means all that portion of a watch which is not the watch case.

8.—(1) Every person who after the date fixed by Order in Council sends or brings a watch case, whether imported or not, to any assay office in the United Kingdom for the purpose of being assayed, stamped, or marked, shall make a declaration declaring in what country or place the case was made. If it appears by such declaration that the watch case was made in some country or place out of the United Kingdom, the assay office shall place on the case such a mark (differing from the mark placed by the office on a watch case made in the United Kingdom), and in such a mode as may be from time to time directed by Order in Council.

(2) The declaration may be made before an officer of an assay office, appointed in that behalf by the office (which officer is hereby authorized to administer such a declaration), or before a justice of the peace, or a commissioner having power to administer oaths in the Supreme Court of Judicature in England or Ireland, or in the Court of Session in Scotland, and shall be in such form as may be from time to time directed by Order in Council.

(3) Every person who makes a false declaration for the purposes of this section shall be liable, on conviction on indictment, to the penalties of perjury, and on summary conviction to a fine not exceeding £20. for each offence.

9.—In any indictment, pleading, proceeding or document, in which any trade-mark or forged trade-mark is intended to be mentioned, it shall be sufficient, without further description and without any copy or *fac simile*, to state that trade-mark or forged trade-mark to be a trade-mark or forged trade-mark.

10.—In any prosecution for an offense against this act—

(1) A defendant and his wife or her husband, as the case may be, may, if the defendant thinks fit, be called as a witness, and, if called, shall be sworn and examined, and may be cross examined and re-examined in like manner as any other witness.

(2) In the case of imported goods, evidence of the port of shipment shall be *prima facie* evidence of the place or country in which the goods were made or produced.

11.—Any person who, being within the United Kingdom, procures, counsels, aids, abets or is accessory to the commission, without the United Kingdom, of any act, which, if committed in the United King-

dom, would under this act be a misdemeanor, shall be guilty of that misdemeanor as a principal, and be liable to be indicted, proceeded against, tried and convicted in any county or place in the United Kingdom in which he may be, as if the misdemeanor had been there committed.

12.—(1) Where, upon information of an offence against this act, a justice has issued either a summons requiring the defendant charged by such information to appear to answer to the same, or a warrant for the arrest of such defendant, and either the said justice on or after issuing the summons or warrant, or any other justice, is satisfied by information on oath that there is reasonable cause to suspect that any goods or things by means of or in relation to which such offence has been committed are in any house or premises of the defendant, or otherwise in his possession or under his control in any place, such justice may issue a warrant under his hand by virtue of which it shall be lawful for any constable named or referred to in the warrant to enter such house, premises or place at any reasonable time by day and to search there for and seize and take away those goods or things; and any goods or things seized under any such warrant shall be brought before a court of summary jurisdiction for the purpose of its being determined whether the same are or are not liable to forfeiture under this act.

(2) If the owner of any goods or things which, if the owner thereof had been convicted, would be liable to forfeiture under this act, is unknown or cannot be found, an information or complaint may be laid for the purpose only of enforcing such forfeiture, and a court of summary jurisdiction may cause notice to be advertised stating that, unless cause is shown to the contrary at the time and place named in the notice, such goods or things will be forfeited, and at such time and place the court, unless the owner, or any person on his behalf, or other person interested in the goods or things, shows cause to the contrary, may order such goods or things or any of them to be forfeited.

(3) Any goods or things forfeited under this section, or under any other provision of this act, may be destroyed or otherwise disposed of, in such manner as the court by which the same are forfeited may direct, and the court may, out of any proceeds which may be realized by the disposition of such goods (all trade-marks and trade descriptions being first obliterated), award to any innocent party any loss he may have innocently sustained in dealing with such goods.

13.—The act of the session of the twenty-second and twenty-third years of the reign of Her present Majesty, chapter seventeen, entitled "An act to prevent vexatious indictments for certain misdemeanors," shall apply to any offense punishable on indictment under this act, in like manner as if such offense was one of the offenses specified in section 1 of that act, but this section shall not apply to Scotland.

14.—On any prosecution under this act the court may order costs to be paid to the defendant by the prosecutor, or to the prosecutor by the defendant, having regard to the information given by and the conduct of the defendant and prosecutor respectively.

15.—No prosecution for any offense against this act shall be commenced after the expiration of three years next after the commission of the offense, or one year next after the first discovery thereof by the prosecutor, whichever expiration first happens.

16.—Whereas it is expedient to make further provision for prohibiting the importation of goods which, if sold, would be liable to forfeiture under this act, be it therefore enacted as follows:

(1) All such goods, and also all goods of foreign manufacture bearing any name or trade-mark, being or purporting to be the name or trade-mark of any manufacturer, dealer or trader in the United Kingdom, unless such name or trade-mark is accompanied by a definite indication of the country in which the goods were made or produced, are hereby prohibited to be imported into the United Kingdom, and, subject to the provisions of this section, shall be included among goods prohibited to be imported as if they were specified in section 42 of the Customs Consolidation Act, 1876.

(2) Before detaining any such goods, or taking any further proceedings with a view to the forfeiture thereof under the laws relating to the Customs, the Commissioners of Customs may require the regulations under this section, whether as to information, security, conditions or other matters, to be complied with, and may satisfy themselves in accordance with those regulations that the goods are such as are prohibited by this section to be imported.

(3) The Commissioners of Customs may, from time to time, make, revoke, and vary regulations, either general or special, respecting the detention and forfeiture of goods the importation of which is prohibited by this section, and the conditions, if any, to be fulfilled before such detention and forfeiture, and may by such regulations determine the information, notices, and security to be given and the evidence requisite for any of the purposes of this section, and the mode of verification of such evidence.

(4) Where there is on any goods a name which is identical with or a colorable imitation of the name of a place in the United Kingdom, that name, unless accompanied by the name of the country in which such place is situate, shall be treated for the purpose of this section as if it were the name of a place in the United Kingdom.

(5) Such regulations may apply to all goods the importation of which is prohibited by this section, or different regulations may be made respecting different classes of such goods, or of offenses in relation to such goods.

(6) The Commissioners of Customs, in making and in administering the regulations, and generally in the administration of this section, whether in the exercise of any discretion or opinion, or otherwise, shall act under the control of the Commissioners of Her Majesty's Treasury.

(7) The regulations may provide for the informant reimbursing the Commissioners of Customs all expenses and damages incurred in respect of any detention made on his information, and of any proceedings consequent on such detention.

(8) All regulations under this section shall be published in the *London Gazette* and in the *Board of Trade Journal*.

(9) This section shall have effect as if it were part of the Customs Consolidation act, 1876, and shall accordingly apply to the Isle of Man as if it were part of the United Kingdom.

(10) Section 2 of the Revenue act, 1883, shall be repealed as from a day fixed by regulations under this section, not being later than January 1, 1888, without prejudice to anything done or suffered thereunder.

17.—On the sale or in the contract for the sale of any goods to which a trade-mark, or mark, or trade description has been applied, the vender shall be deemed to warrant that the mark is a genuine trade-mark and not forged or falsely applied, or that the trade description is not a false trade description within the meaning of this act, unless the contrary is expressed in some writing signed by, or on behalf of, the vender and delivered at the time of the

sale or contract to and accepted by the vendee.

18.—Where, at the passing of this act, a trade description is lawfully and generally applied to goods of a particular class, or manufactured by a particular method, to indicate the particular class or method of manufacture of such goods, the provisions of this act with respect to false trade descriptions shall not apply to such trade description when so applied: Provided that where such trade description includes the name of a place or country, and is calculated to mislead as to the place or country where the goods to which it is applied were actually made or produced, and the goods are not actually made or produced in that place or country, this section shall not apply unless there is added to the trade description, immediately before or after the name of that place or country, in an equally conspicuous manner, with that name, the name of the place or country in which the goods were actually made or produced, with a statement that they were made or produced there.

19.—(1) This act shall not exempt any person from any action, suit or other proceeding which might, but for the provisions of this act, be brought against him.

(2) Nothing in this act shall entitle any person to refuse to make a complete discovery, or to answer any question or interrogatory in any action, but such discovery or answer shall not be admissible in evidence against such person in any prosecution for an offence against this act.

(3) Nothing in this act shall be construed so as to render liable to any prosecution or punishment any servant of a master resident in the United Kingdom, who *bona fide* acts in obedience to the instructions of such master, and, on demand made by or on behalf of the prosecutor, has given full information as to his master.

20.—Any person who falsely represents that any goods are made by a person holding a Royal Warrant, or for the service of Her Majesty or any of the Royal Family, or any Government department, shall be liable, on summary conviction, to a penalty not exceeding £20.

21.—In the application of this act to Scotland the following modifications shall be made:

The expression "Summary Jurisdiction acts" means the Summary Procedure act, 1864, and any acts amending the same.

The expression "justice" means sheriff.

The expression "court of summary jurisdiction" means the Sheriff Court, and all jurisdiction necessary for the purpose of this act is hereby conferred on sheriffs.

22.—In the application of this act to Ireland, the following modifications shall be made:

The expression "Summary Jurisdiction acts" means, so far as respects the police district of Dublin metropolis, the acts regulating the powers and duties of justices of the peace of such district, and as regards the rest of Ireland means the Petty Sessions (Ireland) act, 1851, and any act amending the same.

The expression "court of summary jurisdiction" means justices acting under those acts.

23.—The Merchandise Marks act, 1862, is hereby repealed, and any unrepealed enactment referring to any enactment so repealed shall be construed to apply to the corresponding provision of this act; provided that this repeal shall not affect—

(a) any penalty, forfeiture, or punishment incurred in respect of any offence committed against any enactment hereby repealed; nor

(b) the institution or continuance of any proceeding or other remedy

under any enactment so repealed for the recovery of any penalty incurred, or for the punishment of any offence committed, before the commencement of this act; nor

(c) any right, privilege, liability, or obligation acquired, accrued, or incurred under any enactment hereby repealed.

## Louisville.

LOUISVILLE, KY., March 5, 1888.

**Pig Iron.**—There have been some sales of round lots during the last week, but no perceptible change in prices. Buyers' views are that the market is not as low as it will be in the future, and are not able to buy very much Iron on this basis. There have been sales, however, of 1000 and 2000 tons of Foundry Irons on a lower basis than any that have been reported yet. Old Wheels are scarce, and there is not the number of Old Rails on the market that are expected. Current quotations for Pig Iron are as follows:

Southern Coke, No. 1 Foundry...	\$18.50 @	\$19.50
" No. 2 "	17.50 @	18.50
" No. 2½ "	17.00 @	18.00
Hanging Rock, Coke, No. 1 Foundry...	19.00 @	20.00
Hanging Rock, Charcoal, No. 1 Foundry...	22.50 @	24.00
Southern Charcoal, No. 1 Foundry...	19.50 @	21.50
Silver Gray different grades...	16.00 @	17.00
Southern Coke, No. 1 Mill, Neutral	16.00 @	17.00
" No. 2 "	15.50 @	16.50
" No. 1 " Cold Short	15.50 @	16.50
White and Mottled different grades	15.00 @	16.00
Southern Car-Wheel, standard brands	23.00 @	24.00
Southern Car-Wheel, other brands	20.00 @	21.00
Hanging Rock, Cold Blast	24.00 @	25.00
Hanging Rock, Warm Blast	20.00 @	21.00

## Detroit.

WILLIAM F. JARVIS & Co., Pig-Iron merchants, Detroit, report as follows under date of March 5: We are unable to report anything but a dull market, with prices ruling low, and on nearly all grades a decided weakness is apparent. There have been but few transactions in Lake Superior Charcoal within the past week, but prices on this grade have remained about normal. We do not think this grade could be made and sold much lower than it is at present, and while there is a sympathy between Coke and Charcoal Irons, it seems very probable that no reductions will be made in Charcoal, but that it will regain its relative position with Coke, which it occupied prior to 1887, as it is to be recollected that during the latter portion of last year Charcoal Iron ruled low the price of Northern Coke Irons. It is a trifle over them at present, and in all probability will go no lower. The tariff tinkering, the coming elections, railroad strikes, and all, are generally thought to be disturbing elements in the Pig-Iron business at the present time, and it is doubtful if any stronger feeling will exist until these vital matters are settled. We quote the market to-day as follows:

Lake Superior Charcoal, all numbers	\$21.50 @	\$22.00
Lake Superior Coke, All Ore	21.00 @	21.50
Lake Superior Coke, Cinder Mixed	19.00 @	19.75
Standard Ohio Blackband	21.25 @	21.75
Southern No. 2	19.00 @	19.50
Southern Silvery	18.50 @	19.00
Jackson County, Ohio, Silvery	20.50 @	21.50
American Old Iron Rails	24.00 @	26.00
Old Wheels	21.50 @	22.00

## Imports.

The imports of Iron and Steel, Hardware, &c., at this port from February 28 to March 5, inclusive, and from January 1 to March 5, inclusive, were as follows:

Iron and Steel.		Feb. 28 to March 5.	Jan. 1 to March 5.
		Tons.	Tons.
Iron Ore: Naylor & Co.	543	3,880	
A. Earnshaw	3,167	2,979	
P. DeFlores	803	1,582	
Pig Iron: G. W. Stetson & Co.	250	3,400	
Spiegel Eisen: J. A. Jansen	950	7,532	

Steel: J. Abbott & Co.	365	314
W. F. Wagner	25	236
A. Milne & Co.	25	961
R. H. Wolff & Co.	12	118
R. F. Downing & Co.	7	41
M. Cohn & Co.	7	56
C. A. Walschid	5	5
Newton & S.	5	38
C. F. Boker	2	19
C. W. Power	2	10
Steel Rods: Naylor & Co.	9.0	2,712
S. A. Gaipin	144	854
Steel Forgings: Thos. Prosser & Son	45	1,016
Steel Sheets: Naylor & Co.	79	112
Steel Plates: Henderson Bros.	10	10
C. A. Walschid	1	1
Steel Tires: Naylor & Co.	6½	6½
Steel Wire: J. A. Roebling's Sons	11	11
Steel Hoops: Wheelock & Co.	210	210
Steel Slabs: Ogden & Wallace	30	30
Rive Rods: J. Abbott & Co.	25	281
A. Milne & Co.	20	70
Bacon & Co.	23	61
Old Steel: Dana & Co.	75	75
Shovel Steel: St. Louis Shovel Company	13	13
Scrap Iron: Jas. E. Ward & Co.	50	50
Sheet Iron: T. B. Coddington & Co.	45	317

## Tin Plates.

	Boxes.	Boxes.
Phelps, Dodge & Co.	14,477	79,750
Dickerson, Van Duzen & Co.	4,667	51,782
T. B. Coddington & Co.	3,923	37,784
R. Crooks & Co.	2,991	14,004
Jas. Byrnes & Son	2,605	6,133
Naylor & Co.	2,076	16,855
Bruce & Cook	1,748	12,494
N. L. Cort & Co.	1,226	20,615
A. A. Thomsen & Co.	2,268	29,328
Lombard, Ayres & Co.	1,500	1,800
Central Stamping Company	1,153	1,463
Woolf & Reesing	500	1,400
S. Shepherd & Co.	295	716

## Metals.

	Pounds.	Pounds.
Tin: Crooke S. and Rfg. Co.	58,523	125,081
Hendricks Bros.	22,400	180,457
D. Thomsen & Co.	22,437	81,612

## Hardware, Machinery, &c.

Armstaedt & Co., Mach'y, cs., 3  
Barbour Bros. & Co., Mach'y, cs., 6  
Boker, Hermann & Co., Mdse., cs., 26  
Codd, Hiram & Co., Mach'y, cs., 1  
Castle, S. A. & Co., Mdse., cs., 6  
Curley, J. & Bro., Cutlery, cs., 5  
Clark, G. & Bro., Mach'y, cs., 129  
Detroit Stove Works, Mdse., cs., 5  
Fried, Alfred & Co., Guns, cs., 2; Hdw., case, 1; ditto ck., 1; Mdse., cs., 7  
Hermann, Ankam & Co., Mach'y, cs., 22  
Hampton, J. W. Jr., & Co., Hdw., cks., 2  
Kastor, A., Cutlery, cs., 2  
Lau, J. H. & Co., Arms, cs., 8  
Manning, Maxwell, J. M., Mach., cs., 6  
Page, Dennis & Co., Mach'y, cs., 1  
Phoenix Horseshoe Co., Steel Billets, 190  
Rosenthal & Co., Hdw., cs., 3  
Schoverling, Daly & Gales, Mdse., cs., 4  
Sloane, W. & G., Mach'y, cs., 45  
Sellers, W. E., Mdse., cs., 3  
Strauss, Blumenthal & Co., Hdw., cs., 3  
The Universal Knitting Machine Co., Mdse., cs., 7  
Taylor, Thos., Hdw., cs., 7  
Vom Cleft & Co., Mdse., cs., 6  
Weilks, Strauss & Co., Hdw., cs., 3  
Wiebusch & Hilger, Lim., Mdse., cs., 14  
Order: Machines, cs., 4; Arms, cs., 15; Mach'y, cs., 36; Hdw., pkgs., 2; ditto, case, 1; Cutlery, case, 1

Irons and Metals Warehoused from February 28 to March 5, inclusive: Tons.  
Scrap Iron: Jas. E. Ward & Co. 75

## Exports of Metals.

	Feb. 28 to March 5.	Jan. 1 to March 5.
	Pounds.	Pounds.
Copper: J. Abbott & Co.	460,000	3,515,859
Lewisohn Bros.	374,222	1,756,784
American Metal Company	117,056	1,408,957
F. A. Lomal	25,018	2,506,018
G. H. Nichols		111,116
J. Bruce Ismay		112,000
S. Mendel		560,000
Ledoux & Co.		2,100
Phelps, Dodge & Co.		290,064
Muller, Richard & Co.		225,000
Copper Quee: Con. M. Co.		224,034
J. Kennedy & Co.		112,036
H. Becker & Co.		1,250
Orford C. & S. Rfg. Co.		224,881
Robt. M. Thompson		125,000
Thos. J. Pope, Sons & Co.		115,000
J. Parsons & Co.		67,500
Copper Matte: Williams & Terhu	245,720	13,376,828
Lewisohn Bros.	329,080	2,554,980
American Metal Company	22,400	383,975
J. Abbott & Co.	293,000	395,000
C. Ledoux & Co.		326,520
F. W. J. Hurst	184,288	184,288
Copper Ore: G. H. Nichols	181,698	181,698

The Pennsylvania Railroad Company have decided to expend \$2,000,000 for new rolling stock, to meet the demands of their increasing business. Contracts have just been awarded for the construction of 3000 gondola cars of 25 tons capacity each, to be used for transporting coal on the lines east of Pittsburgh.



# CURRENT HARDWARE PRICES.

MARCH 7, 1888.

Note.—The quotations given below represent the Current Hardware Prices which prevail in the market at large. They are not given as manufacture prices, and manufacturers should not be held responsible for them. In cases where goods are quoted at lower figures than the manufacturers name, it is stated that the manufacturers are selling at the prices quoted, but simply that the goods are being sold, perhaps by the manufacturers, perhaps by the jobber at the figures named.

## Ammunition.

Caps, Perfection, 1000—	
Edwards & Goldmark's	
F. L. Waterproof, 1-10's.....	dis 25¢
E. B. Trimmer Edge, 1-10's.....	dis 25¢
E. B. Ground Edge, Central Fire, 1-10's.....	dis 25¢
Double Waterproof, 1-10's.....	dis 25¢
Musket Waterproof, 1-10's.....	dis 25¢
G. D.....	dis 25¢
A. B.....	dis 25¢
Union Metallic Cartridge Co.	
F. C. Trimmer.....	dis 25¢
F. L. Ground.....	dis 25¢
Cent. Fire Ground.....	dis 25¢
Double Waterproof, 1-10's.....	dis 25¢
Double Waterproof, in 1-10's.....	dis 25¢
A. B. Genuine Imported.....	dis 25¢
Eley's E. B.....	dis 25¢
Eley's D Waterproof, Central Fire.....	dis 25¢

## Cartridges.

Rim Fire Cartridges.....	dis 50¢
Rim Fire Military Cartridges.....	dis 50¢
Cent. Fire Cartridges, Pistol and Rifle.....	dis 50¢
Cent. Fire Cartr. Military & Sporting.....	dis 50¢
Blank Cartridges, except 22 and 32 cal., an additional 10 % over above discounts.	
Blank Cartridges 22 cal.....	dis 50¢
Blank Cartridges 32 cal.....	dis 50¢
Primed Shells and Bullets.....	dis 50¢
B. Caps, Round Ball.....	dis 50¢
B. Caps, Conical Ball, Swaged.....	dis 50¢

## Primers.

Berdan Primers all sizes, and R. L. Caps (for Sturtevant Shells).....	dis 50¢
All other Primers, all sizes.....	dis 50¢

## Shells.

First quality, 4, 8, 10 and 12 gauge.....	dis 50¢
First quality, 14, 16 and 20 gauge (10 list).....	dis 50¢
Star, Club, Rival and 10-gauge, 80 list (dis 23¢).....	dis 50¢
Climax Brands, 12-gauge, 80 list.....	dis 50¢
Club, Rival and Climax Brands, 14, 16 and 20-gauge.....	dis 50¢
Seibold's Combination Shot Shells.....	dis 50¢
Brass Shot Shells, list quality.....	dis 50¢
Brass Shot Shells, Club, Rival & Climax.....	dis 50¢

## Shells Loaded.

List No. 19, 1887.....	dis 20¢
Wads—	
U. M. C. & W. R. A.—B. E., 11 up.....	dis 20¢
U. M. C. & W. R. A.—B. E., 9 & 10.....	dis 20¢
U. M. C. & W. R. A.—B. E., 7 & 8.....	dis 20¢
U. M. C. & W. R. A.—P. E., 11 up.....	dis 20¢
U. M. C. & W. R. A.—P. E., 9 & 10.....	dis 20¢
U. M. C. & W. R. A.—P. E., 7 & 8.....	dis 20¢
Eley's B. E., 11 up.....	dis 20¢
Eley's P. E., 11 & 20.....	dis 20¢

## Anvils.

Armstrong's Anvil.....	dis 20¢
Armstrong's Mouse Hole.....	dis 20¢
Armstrong's Mouse Hole, Extra.....	dis 20¢
Trenton.....	dis 20¢
Wilkinson's.....	dis 20¢
J. & R. Carr. Patent Solid.....	dis 20¢
Smith's Patent.....	dis 20¢
Millers Falls Co.....	dis 20¢
Cheney Anvil and Vice.....	dis 20¢
Allen Combined Anvil and Vice.....	dis 20¢
Moore & Barnes Mfg. Co.....	dis 20¢

## Augers and Bits.

Douglas Mfg. Co.....	dis 70¢
New Haven Copper Co.....	dis 70¢
Wm. A. Ives & Co.....	dis 70¢
Humphreysville Mfg. Co.....	dis 70¢
French, Swift & Co. (F. Beecher).....	dis 70¢
Connecticut Valley Mfg. Co.....	dis 70¢
Cook's, Douglas Mfg. Co.....	dis 70¢
Cook's, New Haven Copper Co.....	dis 70¢
Ives' Circular Lip.....	dis 70¢
Patent Solid Head.....	dis 70¢
C. E. Jennings & Co., No. 10, extension 1 p.....	dis 70¢
C. E. Jennings & Co., No. 30.....	dis 70¢
C. E. Jennings & Co., Auger Bits, in fancy boxes.....	dis 70¢
Set, 32, 40, 48, 56, 64, 72, 80, 88, 96, 104, 112, 120, 128, 136, 144, 152, 160, 168, 176, 184, 192, 200, 208, 216, 224, 232, 240, 248, 256, 264, 272, 280, 288, 296, 304, 312, 320, 328, 336, 344, 352, 360, 368, 376, 384, 392, 400, 408, 416, 424, 432, 440, 448, 456, 464, 472, 480, 488, 496, 504, 512, 520, 528, 536, 544, 552, 560, 568, 576, 584, 592, 600, 608, 616, 624, 632, 640, 648, 656, 664, 672, 680, 688, 696, 704, 712, 720, 728, 736, 744, 752, 760, 768, 776, 784, 792, 800, 808, 816, 824, 832, 840, 848, 856, 864, 872, 880, 888, 896, 904, 912, 920, 928, 936, 944, 952, 960, 968, 976, 984, 992, 1000.....	dis 70¢
Car Bits.....	dis 70¢
L'Hommedieu Car Bits.....	dis 70¢
Forstner Pat. Auger Bits.....	dis 70¢

## Hollow Augers.

Ives.....	dis 25¢
French, Swift & Co.....	dis 25¢
Douglas.....	dis 25¢
Bonney's Adjustable.....	dis 25¢
Stearns.....	dis 25¢
Ives' Expansive, each \$4.50.....	dis 25¢
Universal Expansive, each \$4.50.....	dis 25¢
Wood's.....	dis 25¢

## Expansive Bits.

Clark's small, 1 1/2, large, 2.....	dis 35¢
Ives' No. 4, per doz., \$60.....	dis 35¢
Swan's.....	dis 35¢
Stearns, No. 1, \$25; No. 2, \$22.....	dis 35¢
Stearns' No. 2, \$48.....	dis 35¢

## Smelt Bits.

Common.....	dis 25¢
Diamond.....	dis 25¢
"Bee".....	dis 25¢
Double Cut, Shepardson's.....	dis 25¢
Double Cut, Ct. Valley Mfg. Co.....	dis 25¢
Double Cut, Hartwell's, # gro.....	dis 25¢
Double Cut, Douglass.....	dis 25¢
Double Cut, Ives.....	dis 25¢

## Bit Stock Drills.

Morse Twist Drills.....	dis 50¢
Standard.....	dis 50¢
Cleveland.....	dis 50¢
Syracuse, for metal.....	dis 50¢
Syracuse, for wood (wood list).....	dis 50¢
Williams' or Holt's, for metal.....	dis 50¢
Williams' or Holt's, for wood.....	dis 50¢

## Ship Augers and Bits.

L'Hommedieu's.....	dis 15¢
Watrous's.....	dis 15¢
Enell's.....	dis 15¢
Enell's Ship Auger Pattern Car Bits.....	dis 15¢

## Awl Hatts.

Sewing, Brass Ferrule.....	dis 45¢
Patent Sewing, Short.....	dis 45¢
Patent Sewing, Long.....	dis 45¢
Patent Peg, Plain Top.....	dis 45¢
Patent Peg, Leather Top.....	dis 45¢

## Awls, Brad Sets, &c.

Awls, Sewing, Common.....	dis 35¢
Awls, Shouldered Peg.....	dis 40¢
Awls, Patent Peg.....	dis 40¢
Awls, Shouldered Brad.....	dis 35¢
Awls, Handled Brad.....	dis 45¢
Awls, Handled Scratch.....	dis 35¢
Awls, Socket Scratch.....	dis 25¢

## Awl and Tool Sets.

Awl and Tool Sets, No. 20.....	dis 50¢
Awl and Tool Sets, No. 1, \$12; 2, \$15; 3, \$18; 4, \$21.....	dis 50¢

Miller's Falls Adj. Tool Hds., Nos. 1, \$12; 2, \$18; 3, \$25.....	dis 50¢
Henry's Combination Haft.....	dis 50¢
Brad Sets, No. 42, \$10.50; No. 43, \$12.50.....	dis 50¢
Brad Sets, Stanley's Excelsior, No. 1, \$7.50.....	dis 50¢
Brad Sets, Stanley's Excelsior, No. 2, \$4.00.....	dis 50¢
Brad Sets, Stanley's Excelsior, No. 3, \$5.50.....	dis 50¢

## Axes.

Makers' and Special Brands—	
First quality.....	dis 50¢
Others.....	dis 50¢

## Axle Grease.

Fraser's, in bulk.....	dis 50¢
Dixon's Everlasting, in bxs., # doz, 1 b.....	dis 50¢
Dixon's Everlasting.....	dis 50¢
Lower grades, special brands.....	dis 50¢

## Axles.

No. 1, 4¢ @ 4 1/2¢; No. 2, 5¢ @ 5 1/2¢.....	dis 50¢
No. 3, 6¢ @ 6 1/2¢; No. 4, 7¢ @ 7 1/2¢.....	dis 50¢
National Wrought Steel Tubular Self-Opening.....	dis 50¢
Standard Farm (1 to 5) and Special Farm (1 to 5).....	dis 50¢
Less than 10 sets.....	dis 50¢
Over 10 sets.....	dis 50¢
Strong Exp. (6 to 9), and XX Strong Truck (10 to 16).....	dis 50¢
Less than 10 sets.....	dis 50¢
Over 10 sets.....	dis 50¢

## Chisel Holders.

Sorensen's Pat., # doz \$18.....	dis 50¢
Chisels, Spring Balances.....	dis 50¢
Common 2 1/2.....	dis 50¢
Chisels, Spring Balances.....	dis 50¢
Chisels, Circular Spring Balances.....	dis 50¢

## Belts.

Light Brass.....	dis 70¢
Extra Heavy.....	dis 70¢
White Metal.....	dis 70¢
Silver Chime.....	dis 70¢
Globe (Cone's Patent).....	dis 70¢

## Belts.

Gong, Abbe's.....	dis 25¢
Song, Yankee.....	dis 40¢
Song, Barton's.....	dis 40¢
Crane, Taylor's.....	dis 50¢
Crane, Brooks.....	dis 50¢
Crane, Cone's.....	dis 10¢
Crane, Connel's.....	dis 20¢
Lever, Sargent's.....	dis 60¢
Lever, Taylor's Bronzed or Plated.....	dis 60¢
Lever, Taylor's Japanned.....	dis 60¢
Lever, R. E. & Co.'s.....	dis 50¢
Full, Brook's.....	dis 50¢
Full, Westerns.....	dis 25¢

## Common Wrought.

Western.....	dis 20¢
Kentucky.....	dis 20¢
Kentucky "Star".....	dis 20¢
Kentucky, Sargent's list.....	dis 70¢
Dodge, Genuine Kentucky, New list.....	dis 70¢
Texas Star.....	dis 50¢
Full.....	dis 40¢
Full Bell.....	dis 25¢
Steel Alloy Church and School Bells.....	dis 40¢

## Bellows.

Blacksmith's.....	dis 50¢
Hand Bellows.....	dis 40¢

## Belting, Rubber.

Common Standard.....	dis 75¢
Extra.....	dis 70¢
N. Y. B. & P. Co. Standard.....	dis 60¢
N. Y. B. & P. Co. Extra Standard.....	dis 50¢

## Bench Stops.

Morrill's.....	dis 50¢
Hotchkiss's.....	dis 50¢
Weston's, per doz No. 1, \$10; No. 2, \$9.....	dis 50¢
McGill's.....	dis 50¢

## Bits.

Augers and Bits.....	dis 50¢
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## Bit Holders.

Extension, Barber's.....	dis 40¢
Extension, Ives.....	dis 40¢
Diagonal.....	dis 40¢
Angular.....	dis 40¢

## Blind Adjusters.

Domestic.....	dis 35¢
Excelsior.....	dis 35¢
Washburn's Self-Locking.....	dis 20¢

## Blind Fasteners.

Macrell's.....	dis 20¢
Van Sand's Screw Pattern.....	dis 60¢
Van Sand's Old Pattern.....	dis 55¢
Washburn's Old Pattern.....	dis 50¢
Merriman's.....	dis 50¢
Austin Edge No. 3008.....	dis 50¢
Security Gravity.....	dis 50¢

## Blind Staples.

Barbed, 1/2 in. and larger.....	dis 8¢
Barbed, 1/2 in.....	dis 9¢

## Blocks.

Ordinary Tackle, list April 17 '85.....	dis 40¢
Cleveland Block Co., Mal. Iron.....	dis 50¢

## Boats.

Cast Iron Barrel, Square, &c.....	dis 70¢
Cast Iron Shutter Bolts.....	dis 70¢
Cast Iron Chain Sargen's list.....	dis 55¢
Ives' Patent Door Bolts.....	dis 55¢
Wrought Barrel.....	dis 70¢
Wrought Square.....	dis 70¢
Wrt Shutter, All Iron, Stanley's list.....	dis 60¢
Wrt Shutter, Brass Knob, Stanley's.....	dis 40¢
Wrought Shutter, Sargent's list.....	dis 60¢
Wrought Sunk Flush, Sargent's list.....	dis 50¢
Wrought Sunk Flush, Stanley's list.....	dis 40¢
Wrought B.K. Flush, Com'n Stanley's list.....	dis 55¢

## Carriage.

Com. list June 10, '84.....	dis 70¢
Genuine Eagle, list Oct. '84.....	dis 75¢
Phila. pattern, list Oct. 7, '84.....	dis 75¢
R. B. & W. old list.....	dis 70¢

## Common.

Common, list Feb. 28, 1883.....	dis 55¢
P. C. B. & N. Co., Empire, list Feb. 28, 1883.....	dis 55¢
P. C. B. & N. Co., Philadel., list Oct. '84.....	dis 80¢
P. C. B. & N. Co., Keystone, Phil. list Oct. '84.....	dis 80¢
P. C. B. & N. Co., Norway, Phil. list Oct. '84.....	dis 80¢
Am. S. Co., Norway, Phil. list Oct. '84.....	dis 80¢
Am. S. Co., Eagle, Phil. list Oct. '84.....	dis 80¢
Am. S. Co., Philadel., list Oct. 16, '84.....	dis 80¢
Am. S. Co., Bay State, list Feb. 28, '83.....	dis 80¢
R. B. & W., Philadel., list Oct. 16, 1884.....	dis 80¢
R. & E. Mfg. Co., list Oct. 16, 1884.....	dis 80¢

## Stove and Pione.

Stove.....	dis 62¢
Am. S. Co. Stove, Annealed.....	dis 62¢
R. B. & W. Pione.....	dis 62¢
R. B. & W. Stove.....	dis 62¢
R. & E. Mfg. Co., Stove.....	dis 62¢
Machine.....	dis 75¢
Bolt Ends.....	dis 75¢

## Boring.

Without Augers, Upright, Angular.....	dis 50¢
Douglas.....	dis 50¢
Snell's Patent.....	dis 50¢
Jennings.....	dis 50¢
Other Machines.....	dis 50¢
Phillips' Pat., with Augers 7.00.....	dis 50¢

## Bow Pins.

Humason, Beckley & Co.'s.....	dis 60¢
Sargent & Co.'s.....	dis 60¢
Peck, Stow & W. Co.....	dis 60¢

## Braces.

Douglas.....	5.50	\$6.75.....dis 50
Snell's, Rice's Patent....	5.50	6.75.dis 40&10&10
Jennings.....	5.50	6.75.dis 45&45&10
Other Machines.....	2 25	2.75.....

World's Best, # gross, No. 1, \$12.00; No. 2, \$24.00  
No. 3, \$36.00.....dis 50&10  
Universal.....dis 35&5  
Domestic.....dis 25.50, dis 45  
Champion.....dis 22.00, dis 50

**Cards.**  
Horse and Curry.....dis 10 @ 10&10  
Cotton.....New list, Aug., 1883, dis 10  
Wool.....dis 10

**Carpet Stretchers.**  
Cast Steel, Polished.....dis 35.25  
Cast Iron, Steel Points.....dis 30  
Socket.....dis 25 @ 25&10  
Bullard's.....dis 25 @ 25&10

**Carpet Sweepers.**  
Bissell No. 5.....dis 17.00  
Bissell Grand, 7 New Drop Pan.....dis 36.00  
Grand Rapid.....dis 24.00  
Crown Jewel.....No. 1, \$18; No. 2, \$19; No. 3, \$20  
Magic.....dis 17.00  
Jewel.....dis 17.00  
Mystic.....dis 18.00  
Cottage.....dis 18.00  
Garland.....dis 24.00  
Parlor Queen.....dis 24.00  
Housewife's Delight.....dis 18.00  
Queen.....dis 18.00  
Queen, with band.....dis 18.00  
King.....dis 18.00  
Weed Improved.....dis 18.00  
Hub.....dis 18.00  
Cog Wheel.....dis 18.00

**Cartridges.**—See Ammunition.  
**Casters.**  
Bed.....New list:  
Plate.....dis 55  
Shallow Socket.....dis 60  
Deep Socket.....dis 60  
Yale Casters, list May, 1884.....dis 30&10  
Yale, Gem.....dis 60&10  
Martin's Patent (Phoenix).....dis 45&10  
Payson's Anti-friction.....dis 60  
"Giant" Truck Casters.....dis 10 @ 10&5  
Stationary Truck Casters.....dis 45&10

**Cattle Leaders.**  
Humason, Beckley & Co.'s.....dis 70  
Sargent's.....dis 60&10  
Hotchkiss.....dis 30  
Peck Stow & W. Co.....dis 50&10

**Chains.**  
Trace, 5/16-2, exact sizes, # pair, \$1.03.....dis 50&10  
Trace, 5/16-3, exact sizes, # pair, .92.....dis 50&10  
Trace 7-10-2, exact sizes, # pair, 1.11.....dis 50&10  
NOTE.—Traces. "Regular" sizes # net pair less than exact.  
Log, Fifth, Stretcher, and other fancy Chains, list Nov. 1, 1884.....dis 50&10  
American Coll 3-16 5 25 4 60 4 40 3 25 3 75  
In cash lots, 8.50 8.25 5.25 4.60 4.40 4.20 3.95 3.75  
Less than cash lots, add 1/4 @ 1/4 # #  
German Coll, list of June 20, 1887.....dis 60&10  
Ger. Halter Chain, list of June 20, 1887.....dis 60&10  
Covert Halter, Hitching and Breast.....dis 50&10  
Covert Traces.....dis 35&10  
Oneida Halter Chain (old list).....dis 45  
Galvanized Pump Chain.....dis 60  
Jack Chain, Iron.....dis 70&10  
Jack Chain, Brass.....dis 70 @ 70&10

**Chalk.**  
White.....dis 55  
Red.....dis 55  
Blue.....dis 55  
White Crayons.....dis 12&12

**Chalk Lines.**—See Lines.

**Chisels.**  
Socket Framing and Firmer—  
Witherby and Douglas.....dis 75&5  
P. S. & W.....dis 75&10  
New Haven and Middlesex.....dis 30  
Buck Bros.....dis 30 @ 30&5  
Merrill.....dis 60&10 @ 60&10&5  
L. & I. J. White.....dis 30 @ 30&5  
Tanged Firmer.....dis 40&10 @ 50  
Tanged Firmer, Butcher's.....dis 45 @ 50.00  
Tanged Firmer, Spear & Jackson's.....dis 45 @ 50.00  
Tanged Firmer, Buck Bros.....dis 16 @ 19&10  
Cold Chisels, # #.....dis 16 @ 19&10

**Chucks.**  
Beach Patent.....each, \$8.00, dis 20  
Morris's Adjustable.....each, \$7.00, dis 20 @ 20&5  
Danbury.....each, \$6.00, dis 30 @ 30&5  
Syracuse, Balz Pat.....dis 25

**Clamps.**  
Providence Tool Co.'s Wrought Iron.....dis 25  
Adjustable, Gray's.....dis 20  
Adjustable, Lambert's.....dis 20  
Adjustable, Snow's.....dis 40&5  
Adjustable, Hammer's.....dis 15  
Adjustable, Stearns'.....dis 20&10  
Stearns' Adjustable Cabinet and Corner.....dis 60&10  
Cabinet, Sargent's.....dis 60&10  
Carriage Makers', Sargent's.....dis 40&10 @ 40&10  
Eberhard Mfg. Co.....dis 40&10 @ 40&10  
Warner's.....dis 40&10 @ 40&10  
Saw Clamps.....See Vices

**Clips.**  
Norway, Axle, 1/4 & 5-16.....dis 55&5  
Second grade Norway Axle, 1/4 & 5-16.....dis 55&5  
Superior Axle Clips.....dis 60&5 @ 60&5  
Norway Spring Bar Clips, 5-16.....dis 60&5  
Wrought-Iron Felloe Clips.....dis 50  
Steel Felloe Clips.....dis 50

**Cocks.**  
Cocks, Brass.....dis 40&10 @ 40&10

**Coffee Mills.**  
Box and Side, list revised Jan., 1888.....dis 50&2  
Selnor's Patent.....dis 50, \$10.50, dis 25  
American, Enterprise Mfg Co.....dis 20&10 @ 30  
The "Swift," Lane Bros.....dis 20&10  
Webb's Patent.....dis 45

**Compasses, Dividers, &c.**  
Compasses, Calipers, Dividers.....dis 70 @ 70&10  
Bemis & Call Co.'s Dividers.....dis 60&5  
Bemis & Call Co.'s Compasses & Calipers.....dis 50&5  
Bemis & Call Co.'s Wing & Inside or Outside.....dis 60  
Bemis & Call Co.'s Double.....dis 60  
Bemis & Call Co.'s (Call's Patent Inside).....dis 30  
Excelsior.....dis 50  
J. Stevens & Co.'s Calipers and Dividers.....dis 25&10

**Coppers' Tools.**  
Bradley's.....dis 20  
Barton.....dis 20 @ 20&5  
L. & I. J. White.....dis 20&5  
Albertson Mfg. Co.....dis 25  
Beatty's.....dis 40 @ 40&5  
Sandusky Tool Co.....dis 30 @ 30&5

**Corkscrews.**  
Humason & Beckley Mfg. Co.....dis 40 @ 40&10  
Clough's Patent.....dis 35 @ 35&5  
Howe Bros. & Hulbert.....dis 35

## Corn Knives and Cutters.

Bradley's.....dis 10  
Wadsworth's.....dis 25  
**Cradles.**—Grain.....dis 50&10 @ 60  
**Crow Bars.**  
Cast Steel.....dis 40  
Iron, Steel Points.....dis 30  
**Curry Combs.**  
Fitch's.....dis 50&10 @ 50&10&10  
Rubber.....dis 10.00, dis 20  
Perfect.....dis 50

**Curtain Pins.**  
Silvered Glass.....net  
White Enamel.....net

**Cutlery.**  
Beaver Falls and Booth's.....dis 35 1/2  
Wostenholme.....\$7.75 @ 8

**Dampers, &c.**  
Dampers and Clips, Buffalo.....dis 40  
Crown Damper.....dis 40  
Excelsior.....dis 40&10

**Dividers—See Compasses.**  
**Dog Collars.**  
Embossed Gilt, Pope & Stevens' list.....dis 30&10  
Leather, Pope & Stevens' list.....dis 40  
Brass, Pope & Stevens' list.....dis 40

**Door Springs.**  
Torrey's Rod, regular size.....dis 1.30  
Gray's.....dis 20  
Bee Rod.....dis 20.00, dis 20  
Warner's No. 1, # dis, \$2.50; No. 2, \$3.30, dis 40&10 @ 50  
Gem (Coll), list April 19, 1886.....dis 20  
Star (Coll), list April 19, 1886.....dis 20  
Victor (Coll).....dis 60 @ 60&10  
Champion (Coll).....dis 60 @ 60&10  
Philadelphia.....dis 60, 8 in., \$7.75, dis 30  
Cowell's.....No. 1, # dis \$18.00; No. 2, \$15.00, dis 50  
Rubber, complete.....dis 4.50, dis 55&10  
Hercules.....dis 50  
Shaw Door Check and Spring.....dis 25 @ 30 @ 35  
Elliott's Door Check and Spring.....dis 25

**Drawing Knives.**  
Witherby and Douglas.....dis 75&10 @ 75, 10&5  
New Haven and Middlesex.....dis 60&10 @ 60&10  
Merrill.....dis 15&10 @ 25  
Watrous.....dis 15&10 @ 25  
L. & I. J. White.....dis 20&5  
Bradley's.....dis 35  
Adjustable Handle.....dis 20 @ 25  
Wilkinson Folding.....dis 25 @ 25&5

**Drills and Drill Stocks.**  
Blacksmith's.....each, \$1.00 @ \$1.50  
Blacksmith's Self-Feeding.....each, \$7.50, dis 20  
Breast, P. S. & W.....dis 40&10  
Breast, Wilson's.....dis 30&5  
Breast, Miller Falls.....each, \$3.00, dis 25  
Breast, Bartholomew's.....each, \$2.50, dis 25&10 @ 40  
Ratchet, Merrill's.....dis 20 @ 30 @ 5  
Ratchet, Ingersoll's.....dis 25  
Ratchet, Parker's.....dis 30 @ 20&5  
Ratchet, Whitney's.....dis 20&10  
Ratchet, Weston's.....dis 20&25  
Ratchet, Moore's Triple Action.....dis 25 @ 30  
Whitney's Hand Drill, Plain, \$11.00, Adjustable, \$12.00.....dis 20&10  
Wilson's Drill Stocks.....dis 15  
Automatic Boring Tools.....each, \$1.75 @ \$1.50  
Twist Drills—  
Morse.....dis 50&10&5  
Standard.....dis 50&10&5  
Syracuse.....dis 50&10&5  
Cleveland.....dis 50&10&5  
Williams.....dis 50&10&10  
Drill Bits.—See Augers and Bits.  
Drill Chucks.—See Chucks.  
Drilling Pans.

Small sizes.....dis 7  
Large sizes.....dis 6 1/2  
**Egg Beaters.**  
National.....dis 2.00  
Family (T. & S. Mfg. Co.).....dis 4.50, dis 3 1/2  
Standard (Standard Co.).....dis 3.00  
Kinston (Standard Co.).....dis 3.00  
Acme (Standard Co.).....dis 3.00  
Duple (Standard Co.).....dis 3.00  
Rival (Tan and Co.).....dis 3.00  
Triumph (T. & S. Mfg. Co.).....dis 10.50 @ 11.50  
Advance No. 1.....dis 10.50  
Advance No. 2.....dis 10.00  
Bryant's.....dis 15.00  
Ayres' Spiral.....dis 24.00  
Paine, Diehl & Co's.....dis 24.00  
Electric Drill Bits, Wollensack's.....dis 15  
Bigelow & Dowse.....dis 20  
Emery.....No. 4 to No. 54 to Flour, CF  
40 gr. 150 gr. F FF  
Kegs, # #.....4 1/2 5 2 1/2  
4 kegs, # #.....4 1/2 5 2 1/2  
10-b cans, 10 in case, 6 #.....6 6  
10-b cans, less than 10 #.....10 7 1/2

**Enameled and Tinned Ware.**—See Hollow Ware.

**Escutcheon Pins.**  
Iron, list Nov. 11, 1885.....dis 50&10 @ 50&10&5  
Brass.....dis 60 @ 60&5  
**Escutcheons.**  
Door Lock.....Same discounts as Door Locks  
Brass Thread.....dis 60 @ 60&10  
Wood.....dis 25  
**Faucets.**  
Fenn's.....dis 40  
Bohren's Patent Rubber Ball.....dis 25  
Fenn's Cork Stops.....dis 35 1/2  
Star.....dis 60 @ 60&5  
Frary's Patent Petroleum.....dis 40&10 @ 40&10  
Watt's Patent Key.....dis 50&10  
Anchor Lock.....dis 45  
Metallic Key, Leather Lined.....dis 55&10 @ 60&10  
Cork Lined.....dis 70 @ 70&10  
Burnside's Red Cedar.....dis 50  
Burnside's Red Cedar, bbl. lots.....dis 50&10  
J. Sommer's Best Block Tin Key.....dis 40  
J. Sommer's Cork Lined, list quality.....dis 50  
J. Sommer's Diamond Lock.....dis 40  
J. Sommer's Goodenough Cedar.....dis 50  
J. Sommer's Perfection, Fla. Red Cedar.....dis 50  
Self-Measuring, Enterprise.....dis 36.00—dis 20&10  
Self-Measuring, Lane's.....dis 36.00—dis 25&10  
Self-Measuring, Victor.....dis 36.00—dis 25&10

**Felloe Plates.**  
Fifth Wheels.—Derby and Cincinnati.....dis 45&5

**Files.**  
Domestic—  
Best brands.....dis 60&10 @ 60&10&5  
Good brands.....dis 60&10 @ 60&10&5  
Fair brands.....dis 70 @ 70&10  
Heller's Horse Rasps.....dis 60&7 1/2 @ 50&10

**Imported.**  
J. & Riley Carr.....List, April 1, 1883, dis 15  
J. & Riley Carr Horse Rasps.....dis 15  
Moss & Gamble.....List April 1, 1883, dis 15  
Butcher.....dis 20  
Stube.....dis 25 @ 30  
Turton's.....Turton's list, dis 20 @ 25  
Greaves' Horse Rasps.....American list, dis 60

## Flatir Machines.

Knox, 1/4-inch Rolls.....\$3.25 each, dis 35  
Knox, 3/8-inch Rolls.....\$3.50 each, dis 35  
Eagle, 3/4-inch Roll.....\$2.15, dis 35  
Eagle, 5/8-inch Roll.....2.85, dis 35  
Crown, 1/2 in., \$3.50; 3/4 in., \$4.00; 1 in., \$4.50 each, dis 35  
Crown Jewel.....\$1.50 each, net  
American, 5-1/2 in., \$3; 6-1/2 in., \$3.40; 7-1/2 in., \$4.50 each, dis 35  
Geneva Hand Fluter, White Metal.....dis 12, dis 25  
Crown Hand Fluter, Nos. 1, \$15; 2, \$12.50; 3, \$10.40, dis 35  
Shepard Hand Fluter, No. 85.....dis 11.30, dis 40  
Shepard Hand Fluter, No. 110.....dis 11, dis 40  
Shepard Hand Fluter, No. 95.....dis 11.50, dis 35  
Combined Fluter and Sad Iron.....dis 15.00, dis 30  
Buffalo.....dis 10.00, dis 10

**Fluting Scissors.**  
Forks.—Hay, Manure, &c. Asso. list.....dis 65&5  
Hay, Manure, &c., Phila. list.....dis 60 @ 60&5  
Plated, see Spoons.

**Freezers, Ice Cream.**  
Shepard's Lightning.....dis 65

**Fruit and Jelly Presses.**  
Enterprise Mfg. Co.....dis 20&10 @ 30  
Henis.....dis 40  
Shepard's Queen City.....dis 40

**Fry Pans.**  
Association list.....dis 75 @ 75&10  
No. 1.....dis 8  
No. 2.....dis 8  
No. 3.....dis 8  
No. 4.....dis 8  
No. 5.....dis 8  
No. 6.....dis 8  
No. 7.....dis 8  
No. 8.....dis 8  
No. 9.....dis 8  
No. 10.....dis 8  
No. 11.....dis 8  
No. 12.....dis 8  
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No. 86.....dis 8  
No. 87.....dis 8  
No. 88.....dis 8  
No. 89.....dis 8  
No. 90.....dis 8  
No. 91.....dis 8  
No. 92.....dis 8  
No. 93.....dis 8  
No. 94.....dis 8  
No. 95.....dis 8  
No. 96.....dis 8  
No. 97.....dis 8  
No. 98.....dis 8  
No. 99.....dis 8  
No. 100.....dis 8

**Fuse.**  
Common Hemp Fuse, for dry ground.....dis 1000 ft.  
Common Cotton Fuse, for dry ground.....dis 2.85  
Single Taped Fuse, for wet ground.....dis 4.75  
Double Taped Fuse, for very wet ground.....dis 4.00  
Triple Taped Fuse, for very wet ground.....dis 7.25  
Small Gutta Percha Fuse, for water.....dis 7.50  
Large Gutta Percha Fuse, for water.....dis 12.00

**Gauges.**  
Marking Mortise, # #.....dis 60&10  
Wire, low list.....dis 10&10  
Wire, Wheeler, Madden & Co.....dis 10  
Wire, Morse's.....dis 50 @ 50&5  
Wire, Brown & Sharpe's.....dis 10 @ 20

**Gimlets.**—Nail and Spike.....dis 50&10&5  
"Eureka" Gimlets.....dis 40&10  
"Diamond" Gimlets.....dis 50.00  
Double Cut, Shepardson's.....dis 45 @ 45&5  
Double Cut, Ives'.....dis 60 @ 60&5  
Double Cut, Douglass'.....dis 40&10  
"Boe".....dis 25 @ 25&5

**Gl.**  
Le Page's Liquid.....dis 25 @ 25&5

**Glue Pots.**  
Tinned and Enameled.....dis 40&5 @ 40&10  
Family, Howe's "Eureka".....dis 40  
Family, L. F. & C.'s "Handy".....dis 50

**Grindstone Fixtures.**  
Sargent's Patent.....dis 70&10  
Reading Hardware Co.....dis 30&10

**Hack Saws.**—See Saws.

**Halters.**—Covert's Pat. 1/4 Jute.....dis 50&2  
Covert's Hemp Horse and Cattle Tie.....dis 50&2  
Covert's Jute Horse and Cattle Tie.....dis 60&10&2

**Hammers.**

**Handled Hammers.**  
Mavdole's.....List Dec. 1, 1885, dis 25 @ 25&10  
Buffalo Hammer Co.....List Jan. 15, '87, dis 50 @ 50&5  
C. Hammon & Son.....dis 10  
Humason & Beckley.....dis 50 @ 50&5  
Atha Tool Co.....dis 10  
verree.....dis 5  
Magnetic Tack, Nos. 1, 2, 3, \$1.25, 1.50 @ 1.75, dis 30&10  
Nelson Tool Works.....dis 30 @ 25  
Warner & Nobles.....dis 30 @ 25  
Peck, Stow & Wilcox.....dis 40  
Sargent's.....dis 35&10

**Heavy Hammers and Sledge.**  
# # and under.....dis 40  
3 to 5.....dis 70 @ 70  
Over 5.....dis 80 @ 80  
Wilkinson's Smiths'.....dis 10 @ 11 1/2

**Hand Cuffs and Leg Irons.**  
Providence Tool Co., Hand Cuffs, \$15.00 # dis, dis 105  
Providence Tool Co., Leg Irons, \$25.00 # dis, dis 105  
Tower's.....dis 25  
Daley's Improved Hand Cuffs: 2 Hands, Polished, # dis, \$18; Nickeled, \$57; 3 Hands, Polished, # dis, \$75; Nickeled, \$84.....dis 20

**Handles.**  
Iron, Wrought or Cast—  
Door or Thumb.....dis 60&10 @ 60&10  
No. 1.....dis 60  
No. 2.....dis 60  
No. 3.....dis 60  
No. 4.....dis 60  
No. 5.....dis 60  
No. 6.....dis 60  
No. 7.....dis 60  
No. 8.....dis 60  
No. 9.....dis 60  
No. 10.....dis 60  
No. 11.....dis 60  
No. 12.....dis 60  
No. 13.....dis 60  
No. 14.....dis 60  
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No. 90.....dis 60  
No. 91.....dis 60  
No. 92.....dis 60  
No. 93.....dis 60  
No. 94.....dis 60  
No. 95.....dis 60  
No. 96.....dis 60  
No. 97.....dis 60  
No. 98.....dis 60  
No. 99.....dis 60  
No. 100.....dis 60

**Hammer, Hatchet, Axe, Sledge, &c.**  
Bridgman's.....dis 35  
Hickory Firmer Chisel, assorted.....dis 5.00  
Hickory Firmer Chisel, large.....dis 5.00  
Apple Firmer Chisel, assorted.....dis 5.00  
Apple Firmer Chisel, large.....dis 5.00  
Socket Firmer Chisel, assorted.....dis 3.00  
Socket Framing Chisel, assorted.....dis 5.00  
J. B. Smith Co.'s Pat. File.....dis 50  
File, assorted.....dis 2.75  
Auger, assorted.....dis 5.00  
Auger, large.....dis 7.00  
Patent Auger, Ives'.....dis 30&10  
Patent Auger, Douglass'.....dis 1.25 net  
Patent Auger, Swan's.....dis 1.00 net  
Hoe, Rake, Shovel, &c.....dis 50&10

**Cross Cut Saw Handles.**  
Atkins' No. 1 Loop, # pair, No. 3, 22¢; No. 2, and No. 4 Reversible, 22¢  
Boynton's Loop Saw Handles.....50¢, dis 60  
Champion.....dis 15

**Hangers.**  
Barn Door, old patterns.....dis 60&10 @ 70  
Barn Door, New England.....dis 60&10 @ 70  
Samson Steel Anti-Friction.....dis 55  
Orleans Steel.....dis 55  
Hamilton Wrought Wood Track.....dis 55  
U. S. Wood Track.....dis 55  
Champion.....dis 60&10  
Rider and Foster, Medina Mfg. Co.'s list.....dis 70  
Clint's Anti-Friction.....dis 55  
Clintmax Steel Anti-Friction.....dis 55  
Zenith for Wood Track.....dis 55  
Reed's Steel Arm.....dis 40  
Challenge, Barn Door.....dis 50  
Sterling Improved (Anti-Friction).....dis 65&10  
Victor, No. 1, \$15; No. 2, \$16.50; No. 3, \$18.....dis 50&5  
Cheriton.....dis 50&5  
Kidder's.....dis 60&10 @ 60  
The "Boss".....dis 60



Best Anti-Friction.....	dis 60
Duplex (Wood Track).....	dis 60
Terry's Patent.....	dis 60
Pat. No. 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95, 96, 97, 98, 99, 100, 101, 102, 103, 104, 105, 106, 107, 108, 109, 110, 111, 112, 113, 114, 115, 116, 117, 118, 119, 120, 121, 122, 123, 124, 125, 126, 127, 128, 129, 130, 131, 132, 133, 134, 135, 136, 137, 138, 139, 140, 141, 142, 143, 144, 145, 146, 147, 148, 149, 150, 151, 152, 153, 154, 155, 156, 157, 158, 159, 160, 161, 162, 163, 164, 165, 166, 167, 168, 169, 170, 171, 172, 173, 174, 175, 176, 177, 178, 179, 180, 181, 182, 183, 184, 185, 186, 187, 188, 189, 190, 191, 192, 193, 194, 195, 196, 197, 198, 199, 200, 201, 202, 203, 204, 205, 206, 207, 208, 209, 210, 211, 212, 213, 214, 215, 216, 217, 218, 219, 220, 221, 222, 223, 224, 225, 226, 227, 228, 229, 230, 231, 232, 233, 234, 235, 236, 237, 238, 239, 240, 241, 242, 243, 244, 245, 246, 247, 248, 249, 250, 251, 252, 253, 254, 255, 256, 257, 258, 259, 260, 261, 262, 263, 264, 265, 266, 267, 268, 269, 270, 271, 272, 273, 274, 275, 276, 277, 278, 279, 280, 281, 282, 283, 284, 285, 286, 287, 288, 289, 290, 291, 292, 293, 294, 295, 296, 297, 298, 299, 300, 301, 302, 303, 304, 305, 306, 307, 308, 309, 310, 311, 312, 313, 314, 315, 316, 317, 318, 319, 320, 321, 322, 323, 324, 325, 326, 327, 328, 329, 330, 331, 332, 333, 334, 335, 336, 337, 338, 339, 340, 341, 342, 343, 344, 345, 346, 347, 348, 349, 350, 351, 352, 353, 354, 355, 356, 357, 358, 359, 360, 361, 362, 363, 364, 365, 366, 367, 368, 369, 370, 371, 372, 373, 374, 375, 376, 377, 378, 379, 380, 381, 382, 383, 384, 385, 386, 387, 388, 389, 390, 391, 392, 393, 394, 395, 396, 397, 398, 399, 400, 401, 402, 403, 404, 405, 406, 407, 408, 409, 410, 411, 412, 413, 414, 415, 416, 417, 418, 419, 420, 421, 422, 423, 424, 425, 426, 427, 428, 429, 430, 431, 432, 433, 434, 435, 436, 437, 438, 439, 440, 441, 442, 443, 444, 445, 446, 447, 448, 449, 450, 451, 452, 453, 454, 455, 456, 457, 458, 459, 460, 461, 462, 463, 464, 465, 466, 467, 468, 469, 470, 471, 472, 473, 474, 475, 476, 477, 478, 479, 480, 481, 482, 483, 484, 485, 486, 487, 488, 489, 490, 491, 492, 493, 494, 495, 496, 497, 498, 499, 500, 501, 502, 503, 504, 505, 506, 507, 508, 509, 510, 511, 512, 513, 514, 515, 516, 517, 518, 519, 520, 521, 522, 523, 524, 525, 526, 527, 528, 529, 530, 531, 532, 533, 534, 535, 536, 537, 538, 539, 540, 541, 542, 543, 544, 545, 546, 547, 548, 549, 550, 551, 552, 553, 554, 555, 556, 557, 558, 559, 560, 561, 562, 563, 564, 565, 566, 567, 568, 569, 570, 571, 572, 573, 574, 575, 576, 577, 578, 579, 580, 581, 582, 583, 584, 585, 586, 587, 588, 589, 590, 591, 592, 593, 594, 595, 596, 597, 598, 599, 600, 601, 602, 603, 604, 605, 606, 607, 608, 609, 610, 611, 612, 613, 614, 615, 616, 617, 618, 619, 620, 621, 622, 623, 624, 625, 626, 627, 628, 629, 630, 631, 632, 633, 634, 635, 636, 637, 638, 639, 640, 641, 642, 643, 644, 645, 646, 647, 648, 649, 650, 651, 652, 653, 654, 655, 656, 657, 658, 659, 660, 661, 662, 663, 664, 665, 666, 667, 668, 669, 670, 671, 672, 673, 674, 675, 676, 677, 678, 679, 680, 681, 682, 683, 684, 685, 686, 687, 688, 689, 690, 691, 692, 693, 694, 695, 696, 697, 698, 699, 700, 701, 702, 703, 704, 705, 706, 707, 708, 709, 710, 711, 712, 713, 714, 715, 716, 717, 718, 719, 720, 721, 722, 723, 724, 725, 726, 727, 728, 729, 730, 731, 732, 733, 734, 735, 736, 737, 738, 739, 740, 741, 742, 743, 744, 745, 746, 747, 748, 749, 750, 751, 752, 753, 754, 755, 756, 757, 758, 759, 760, 761, 762, 763, 764, 765, 766, 767, 768, 769, 770, 771, 772, 773, 774, 775, 776, 777, 778, 779, 780, 781, 782, 783, 784, 785, 786, 787, 788, 789, 790, 791, 792, 793, 794, 795, 796, 797, 798, 799, 800, 801, 802, 803, 804, 805, 806, 807, 808, 809, 810, 811, 812, 813, 814, 815, 816, 817, 818, 819, 820, 821, 822, 823, 824, 825, 826, 827, 828, 829, 830, 831, 832, 833, 834, 835, 836, 837, 838, 839, 840, 841, 842, 843, 844, 845, 846, 847, 848, 849, 850, 851, 852, 853, 854, 855, 856, 857, 858, 859, 860, 861, 862, 863, 864, 865, 866, 867, 868, 869, 870, 871, 872, 873, 874, 875, 876, 877, 878, 879, 880, 881, 882, 883, 884, 885, 886, 887, 888, 889, 890, 891, 892, 893, 894, 895, 896, 897, 898, 899, 900, 901, 902, 903, 904, 905, 906, 907, 908, 909, 910, 911, 912, 913, 914, 915, 916, 917, 918, 919, 920, 921, 922, 923, 924, 925, 926, 927, 928, 929, 930, 931, 932, 933, 934, 935, 936, 937, 938, 939, 940, 941, 942, 943, 944, 945, 946, 947, 948, 949, 950, 951, 952, 953, 954, 955, 956, 957, 958, 959, 960, 961, 962, 963, 964, 965, 966, 967, 968, 969, 970, 971, 972, 973, 974, 975, 976, 977, 978, 979, 980, 981, 982, 983, 984, 985, 986, 987, 988, 989, 990, 991, 992, 993, 994, 995, 996, 997, 998, 999, 1000	

#### Harness Snaps.—See Snaps.

#### Hatchets.—List Jan. 1, 1888.

Isaiah Blood.....	dis 40
Hunt's Shingling Lath and Claw.....	dis 40
Hunt's Broad.....	dis 40
Buffalo Hammer Co.....	dis 40
Hurd's.....	dis 40
Yerkes & Plumb.....	dis 40
Wm. Mann, Jr., & Co.....	dis 40
Underhill Edge Tool Co.....	dis 40
Underhill's Haines and Bright goods.....	dis 40
C. Hammond & Son.....	dis 40
Simmons.....	dis 40
Peck's.....	dis 40
Kelly's.....	dis 40
Sargent & Co.....	dis 40
Ten Eyck Edge Tool Co.....	dis 40
Collins, following list.....	dis 40
Shingling, Nos. 1, 2, 3.....	dis 40
Claw, Nos. 1, 2, 3.....	dis 40
Lathing, Nos. 1, 2, 3.....	dis 40

#### Hay Knives.

Lightning.....	dis 40
Electric.....	dis 40
Gem.....	dis 40
Wadsworth's.....	dis 40
Carter's Needle.....	dis 40
Heath's.....	dis 40

#### Hinges.

Wrought Iron Hinges—	
Strap and T.....	dis 70
Screw Hook and Eye (8, 10, 12 in.).....	dis 70
Strap.....	dis 70
Heavy Welded Hook (8 to 12 in.).....	dis 70
Screw Hook and Eye.....	dis 70
Roller Blind Hinges, Nos. 30 and 31.....	dis 70
Roller Blind Hinges, Nos. 232 and 234.....	dis 70
Roller Blind.....	dis 70
Roller Raised.....	dis 70
Plate Hinges (8, 10, 12 in.).....	dis 70
"Providence" over 12 in.....	dis 70

Spring Hinges—	
Geer's Spring and Blank Butts.....	dis 70
Union Spring Hinge Co.'s list, March, 1888.....	dis 70
Acme and Crown.....	dis 70
Empire and Crown.....	dis 70
Hero and Mo. arch.....	dis 70
American, Gem, and Star, Japanned.....	dis 70
American, Gem, and Star, Bronzed.....	dis 70
Oxford, Bronze and brass.....	dis 70
Barker's Double Acting.....	dis 70
Union Mfg. Co.....	dis 70
Bommer's.....	dis 70
Buckman's.....	dis 70
Chicago.....	dis 70

Gate Hinges—	
Western.....	dis 70
N. E.....	dis 70
N. E. Reversible.....	dis 70
Clark's, Nos. 1, 2, 3.....	dis 70
N. Y. State.....	dis 70
Automatic.....	dis 70
Common Sense.....	dis 70
Seymour's.....	dis 70
Shepard's, Nos. 1, 2, 10 and 20, dis 60 to 100.....	dis 70
Shepard's, Nos. 1, 2, 10 and 20, dis 60 to 100.....	dis 70
Reed's Latch and hinges.....	dis 70

Blind Hinges—	
Parker.....	dis 75&2
Palmer.....	dis 50&5&10
Seymour.....	dis 75&10&5
Nicholson.....	dis 45&10
Huffer.....	dis 50
Clark's, Nos. 1, 3, 5, 40 and 50.....	dis 75&10&5&80
Clark's Mortise Gravity.....	dis 50
Sargen's, Nos. 1, 3, 5, 11, 13.....	dis 75&10&75&10&45
Sargen's, No. 12.....	dis 75&10&10
Reading's "Notelena".....	dis 75&10&10&5
Shepard's "Notelena".....	Nos. 50, 60, 65 & 55
	dis 75&10&5
Shepard's Niagara Gravity, Nos. 1, 3 and 5.....	dis 80
Shepard's Buffalo Gravity, Nos. 1, 3 and 5.....	dis 80&2½
Shepard's Champion Gravity No. 76.....	dis 80&2½
Shepard's Steamboat Gravity, No. 10.....	dis 80&20
Shepard's Acme Lull & Porter.....	dis 75&5&75&10
Shepard's O. S. Lull & Porter.....	dis 75&10
Shepard's "Queen City" Reversible.....	dis 70&10
Clark's Lull & Porter, Nos. 9, 1, 14, 2, 24, 3.....	dis 75&10&5
North's Automatic Blind Fixtures, No. 10.....	dis 75&10&5
Wood, \$10.50; No. 3, for Brick, \$13.50.....	dis 25&2

#### Hoes.

Handled—
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